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ABSTRACT

Many futurists envision that the development of information technology will greatly impact the libraries of tomorrow. In response to this prediction, the Montgomery County (Maryland) Department of Public Libraries conducted a study of key trends and issues that the Montgomery County Public Libraries (MCPL) must consider if they are to remain a viable information resource in the 1990s. The main components of this review include a profile of the users of the 1990s; a scan of information technology and the trends in its development; an overview of where the Library's electronic systems are presently located; a look at funding prospects and alternatives; notes on potential changes on library organization and in the roles of librarians; four scenarios showing different library futures; 20 near-term recommendations for electronic services development; and an annotated bibliography of relevant materials. A subject index and glossary of terms are also provided. Appended to this report is a staff development package that corresponds to the previous sections. Included in this package are instruction sheets, assignments, and discussion question memoranda for participants in the MCPL staff development program. (MAB)

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ELECTRONIC LIBRARY SERVICES
CHOOSING THE LIBRARY FUTURE

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Montgomery County Department of Public Libraries
January 1990

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ELECTRONIC LIBRARY SERVICES

CHOOSING THE LIBRARY FUTURE

EXECUTIVE SUMMARY

Futurists have different ***visions of the library (1)*** of tomorrow and of the impact of computers and of information technology on libraries. But most expect great changes in library institutions in the next decade, which will be heavily related to the development of information technology.

In response to the challenge of expected change, the Department of Public Libraries has initiated this study of key trends and issues that the public library must consider if it is to remain a viable information resource for the community in the 1990's.

Predictions for the decade's demographics, educational needs and business environment support the view that the ***library users (6)*** will need more information to conduct their lives and careers. Access to information will be important to these users, but different user groups will have difference access requirements.

Adult users (6) of the Library will work in a knowledge based economy in which most jobs will require some skill with information processing technology. They will make no fewer than five job changes in a lifetime. A high percentage of the workforce will be women and minorities. These groups along with ***older users (7)***, who will constitute about one quarter of the population will want the convenience of computerized information services, but may share some anxieties about using a highly automated library.

As the decade progresses the Library expects ***student users (7)*** to form a core of information literate adults, who will look for the electronic research tools in the public library to which they were accustomed in high school and in college. College students will regard microcomputers as an "appliance for life". Parents already see computer education as a highly desirable component of public education.

NOTE ON TABLE OF CONTENTS AND HIGHLIGHTED TEXT

In this executive summary key topics, which are covered in the body of the report, are in ***bold, italic type*** followed by page numbers in parentheses. The reader will find the amplified treatment of the subject on the page indicated. An additional table of contents appears on page 4.

Library users in Montgomery County (8) will be very computer literate and heavy users of microcomputers and computer related information services. The Montgomery County Public Schools have a well developed program of computer education and have integrated computer and information technology into the operations of schools and school media centers. A national market survey shows that Montgomery County is one of the top markets in the country when ranked for interests and activities associated with personal computing and with science and new technology. This is coupled with an equally high rating for avid reading. Other market data confirms that ***books (25)*** will continue to be important, low cost 'technology' in libraries. Publishing output continues to increase and booking buying is expected to increase throughout the 1990's. The explosion of printed information is driving the development of systems to record and access it.

There are places where the use of ***information technology (12)*** already leads the public library scene by at least five years. This technology provides options for the Library's five to ten year future. Trends in information technology and representative projects are reviewed in the body of the paper. These trends are:

o Electronic information tools are being directed at ***end users (12)***. They feature more sophisticated graphics and interactive options and sophisticated programming which make systems easier to use and which enhance use results. They will serve users who don't care about the details of how systems work, but are focused only on getting the information they want.

o Clients for information services will want increasing ***customization (13)*** of inquiry and of information products. Information seekers will need more linkage between electronically stored bibliographic and full text databases and applications programs which can produce reports and manipulate information, such as spreadsheets, word processing, and database management tools.

o Workstations (14) will be more powerful, with more of the computing work being done at the workstation and not at a central processing site.

o Large information ***networks (15)*** are being built as infrastructures for the transmission of information and the support of information processing and product. Plans for the extension of networking are being made on the national, state and local level.

o The importance of ***online databases (20)*** as a source of the most current information about business, science and technology will increase in the 1990's.

o CD-ROM products (21), which are growing rapidly in the marketplace, will join online sources as important library reference tools. Databases on CD-ROM will extend library information coverage and offer many of the benefits formerly available only through online searching, directly to end users.

o Local area networks (23) are an attractive option for libraries who want to offer wider access to a variety of CD-ROM databases.

o Library buildings (23) will need to accommodate electronic online catalogs, network connections, databases stored on optical disk storage media, and office automation. Flexible space design and flexible access to power and communication will be critical. New library designs and library renovation plans will increasingly succeed or fail on their ability to accept and distribute sufficient power and telecommunications.

Planned near-term enhancements to the ***automated systems, which the library has now, (26)*** will place more electronically stored information in the hands of end users; provide read only access to a variety of library databases to homes, schools and worksites; improve staff access to office automation and to electronic communications; and begin the linkage of library computing systems and office automation systems.

The ***CARL Integrated Library System (26)*** is central to the Department's development of electronic services in the next three to five years. It is a spine on which these services can be added and disseminated. The CARL system adds a fully searchable online public access catalog to bibliographic and circulation control components. Providing direct use of the public access catalog to library clients is the first and most critical step in library's electronic modernization. The library is approaching 300 electronic ***workstations (31)***. About half of these are for the integrated library system. About 32 or 12% have direct public use. About 220 link terminals would be added in PAC implementation. Worksites would approach 500 and the percentage of direct public use worksites would increase to about 51%.

The Library is implementing dial-up access to the PAC in 1990. Connections between the CARL system and other automated systems are also being explored in the near-term. In the next three years the Library will be planning the next automation steps for office automation as it migrates from the ***WANG VS network (30)*** and networking of ***CD-ROM databases (30)***, which the Library began adding at regional libraries in 1988. There will be a regular ***cycle of investment for technology (46)***.

There is no substantial new ***funding (46)*** out there for the public library at the federal, state or county levels. A recent County ***Task Force To Examine Budget Needs Report (47)*** finds that libraries are among those agencies "...comparatively least in need of program improvements." The Task Force looks for the burdens of funding the operating budget of the government to be shared by its clients through user fees and by County staff through higher efficiency and productivity. The Council and the Executive are acutely aware of the need to keep property taxes at their present level. There are intense pressures on the capital improvements program budget. The County needs an additional $176 million dollars if it is not to delay or cancel critical projects.

Over the last thirty years the County has made a substantial investment in libraries. It has supported the idea that "...the application of information resources to the process of decision-making to fulfill civic responsibilities is a vital necessity." (ALA PRESIDENTIAL..., Major R. Owens, p.5) Information is a key resource if we are "...to adapt, adjust and renew ourselves and our economic activity." (Montgomery County, Commission on the Future, p.45) The trends in information technology and in information management and the sheer growth in the amount of information are not ambiguous. Without staged growth in the area of electronic information services, the County's investment in the information function of libraries will be lost over the next twenty years.

Despite this ***case for public funding (49)*** of electronic information services, new funding is scarce and the library will need to explore other funding strategies. ***Reallocation of funds (51)*** will need to be explored. The public library will have review other fundamental costs for new buildings, for the land for new buildings, for remodeled regional libraries, for speciality information services and for printed reference sources, if it is to fund a service model which uses information technology to offer customized end user services. The Department's POLICY ON BASIC AND FEE-BASED LIBRARY SERVICES suggests in the categories of 'partially subsidized services' and '***fee supported services***' ***(51)*** programs which it may now be time to implement. When writing other kinds of ***grants (52)***, the possibility of delivering high quality service through electronic means should be considered and incorporated in the funding requests. ***Coalitions (52)*** with other libraries and institutions will be needed. Alliances between public libraries and the education community are critical because education is seen as a more natural setting for information technology and the expansion of education will be a critical political issue in the 1990's.

The Library's mission and ***organization (53)*** will be reexamined in the 1990's. This examination will be in part driven by the need to make choices about technology. Choices about technology will fuel debate about appropriate ***library roles (53)***. Information technology introduces new and complex ***service delivery options (55)***. It has a major impact on the tasks of ***planning (55)***, fundraising, fee policy development, and training. The library, like businesses in the 90's, will need better ***client information (56)*** about information needs and service preferences. ***Organizational structure (56)*** may also change. The possibility exists for rapid changes in function for library staff and units. The line between technical and public services may blur. The ***role of librarians (57)*** may well expand to include technology education and database and electronic systems management. The traditional skills of librarians in linking individuals to knowledge resources will transfer to the electronic information age.

Scenarios (60) are useful in stimulating thinking about what library patrons and staff would be doing when different choices about library services and about the staging of technology are been made. Four scenarios are offered in this report. The report concludes with ***recommendations (76)*** for the near term future. An annotated ***list of sources (80)*** consulted in the preparation of this study is also provided.

The content of this study underscores the following assumptions:

1. Information technology will have major impact on library institutions in the 1990's.
2. Library information services will require an infrastructure of information technology. Without it these services will be largely obsolete by the 21st century.
3. Montgomery County will have a substantial number of computer literate library users who will be receptive to, and even expecting, the introduction of electronic library services

4. Information technologies are already being demonstrated elsewhere which provide models for the electronic services in the Department of Public Libraries over the next five years

5. The Department's current systems, particularly the CARL Integrated Library System, are a good foundation for the expansion of electronic access to library resources.

6. There are many possible configurations for the library of the future. Choices about library roles and services should drive choices about technology.

7. Investment in library technology will be an ongoing process and require substantial resources.

8. Public funding resources are scarce, and getting them will continue to be difficult.

9. Public investment in the information function of libraries is a foundation for an informed citizenry and for the economic growth of the community. It will continue to be an important investment in an age of electronic information.

VIEWS OF THE LIBRARY'S ELECTRONIC FUTURE

> My observation convinced me that the computer is not for library use; that all promises offered in its name are completely fraudulent; that not only is it extremely expensive compared to other methods at this time, but that it will become increasingly expensive in the future; that it is wrapped so completely in an aura of unreason that fine intelligences are completely uprooted when talking about it; that its use in a library weakens the library as a whole by drawing off large sums of money for a small return; and that it should be stamped out. (Ellsworth Mason 1971 quoted in Shuman p 5)

Today few would agree with Mr. Mason's 1971 view that the computer could be ignored in the library setting, much less stamped out. However, there are still many differing visions of the impact of computers and of information technology on libraries.

Theodore Roszak in his book, THE CULT OF INFORMATION, affirms the place of the public library as a place for information technology. "... if computerized information services have any natural place in society, it is in the public library. There, the power and efficiency of the technology can be maximized along with democratic access." (Roszak, p.173). He sees the library as "the best developed reference and reading service available to the general public" and as an "existing network ...stationed in almost every neighborhood". He commends the public library for its strong public service ethic, its "high respect for intellectual values", and its "democratic outreach" to a broad clientele including clients which the "data merchants do not regard as any sort of market at all".

Roszak is aware, however, that libraries have not been regarded as primary sites for computers and for electronic information. Information as a public utility has been left largely unfunded. He would probably agree with Patricia Battin, "...that our assumption of information as a public good is in increasing conflict with the economic results of policies and practices supporting information as a commodity." (Financing the Future)

Information professionals as a whole are often less sanguine than Roszak about what public libraries will be in the year 2000 or 2010. At the very least they would hold the library institution to a new and high standard of information performance. The guru of library futurists, J.C.R. Licklider, proposed in 1965 that libraries in the year 2000 would not be buildings but "procognitive systems" that not only store and retrieve information and materials, but provide it in the most convenient manner. He suggested that we consider only information and the medium containing it, not bricks, mortar and shelves. (Shuman p. 3-4) Dr. Donald N. Langenberg, the Chancellor of the University of Illinois at Chicago, recently said, "I know how to build a 19th century library but I am not sure I know how to build a 21st century one." He postulates an 'infory', a system that does for electronic information of all kinds what libraries do for printed information. It would provide clients with access to any information needed and nurture professionals who support this system. Marilyn Gell Mason echoes this, "the public library of the future will be judged not by the size of its collections, but by the success in providing information quickly and accurately. (Shuman p. 49) John Seely Brown of Xerox's Palo Alto Research Center envisions the community library of 2010 as "a center of design -- the design of music, the design of books, the design of film, the design of information" These libraries would be linked together on high-speed, high-band-width computer networks that enable people to share their ideas. (Brown quoted in Schrage) Judged by this standard many predict an uncertain or grim future for the library.

> Ultimately...libraries as we know them seem likely to disappear. Facilities will still exist to preserve the print-on-paper record of the past...they will be more like archives, or even museums, ...the library will be bypassed. That is, people will have very little reason to visit libraries in order to gain access to information. (F.W. Lancaster, Shuman, p. 65)
>
> Public libraries (in 2015) ...will lose a good many of their patrons to private sector information providers. Families are likely to depend on home information systems for the materials they need. (Carlton Rochell, Shuman, 116)
>
> ...our government doesn't have the wit or the money to build this future. Indeed, too many of our traditional libraries have begun to decay. The sad truth is that we're sinking deeper and deeper into swamps of information that become even more and more difficult to access. What's even sadder is that this society and its philantropists lack the vision and the will to take advantage of the resources and opportunities it has to change that. (Schrage)

Bruce Shuman, from whose book THE LIBRARY OF THE FUTURE some of the above quotes were taken, ventures some other scenarios that have a less doomsday quality. In one scenario libraries will fully automate. They will be the hubs from which a user friendly, but robotized system, answers requests for books and information. In another scenario, he proposes the library as a place where advanced video and information technologies can be tested and experienced by consumers and by audiences with special needs. Others have suggested that the library will turn its back on information services and emphasize high touch, low tech services which build on its traditions of service to children, humanities programming and popular materials provision.

The Montgomery County Commission on the Future has recommended that the library system "...incorporate the latest information technology ...so that libraries maintain their status as a center for gathering and dispensing to the public all kinds of information." They note that "...libraries will become ever more important as we change over to an information society. To be most effective, the libraries should have computers capable of handling the data from a wide variety of information resources, both government and private." (pp.111-112) The Commission also commends the library's role as a community and cultural center.

In the Public Services Plan For Public Libraries in Montgomery County, Md. FY 89-94 the Citizen's Planning Committee has set information service and electronic service development goals for the Library Department: improving user access to resources and services both in-house and through networks (Goal 3 and 6); extending the information services of specialties and in general reference (Goal 4 and 5); and applying information technologies to "... improve the efficiency and effectiveness of the services delivered, provide new services to meet user needs, and where possible, deliver services electronically" (Goal 9).

THE REPORT AND ITS CONTENTS

Although futurists obviously disagree about what libraries should be anticipating in their planning for the 21st century, great changes are expected in library institutions in the next decade. Most expect that these changes will be heavily related to the development of information technology.

In response to the challenge of expected change, the Department of Public Libraries has initiated this review of the Library's electronic information future. The study surveys key trends and issues that the public library must consider if it is to remain a viable information resource for the community in the 1990's. The main components of the review are as follows:

- a profile of the users of the 1990's (6)
- a scan of information technology and the trends in its development (12)
- an overview of where the Library's electronic systems are now (26)
- a look at funding prospects and alternatives (46)
- notes on potential changes in library organization and in the roles of librarians (53)
- four scenarios showing different library futures (60)
- twenty near-term recommendations for electronic services development (76)
- an annotated bibliography of relevant materials (80)

The report includes little or nothing about some relevant topics: new telephone systems and voice communications, adaptations for minority and special needs access, information technology and children, and the development of audio-visual formats and collection. These are among the areas in which more study will be needed. In particular more sophisticated voice communications options need to be introduced through out the library system.

In the initial charge, this study was to predict technical, economic and other developments for the next five to ten years. The report does not look that far into the future. There are major reasons for this. The library will be able to draw on information technology already being developed as models for its technological expansion over the next five years. County planners have eschewed economic planning beyond the next three years concurring with many recent forecasts which stress the unpredictability of the 90's. One college administrator has said, "...our generation faces a critical disjuncture between the past and the present in which our fundamental assumptions simply do not apply. In almost every area of public policy we're reexamining and reinterpreting those assumptions to fit the new realities." (Financing the Future) Management specialists are beginning to tell us that long range planning, especially for information systems, is not useful. There are too many big, unpredictable variables. These analysts are recommending that businesses build organizations that are lean in personnel and that are flexible and resilient, reacting quickly to change.

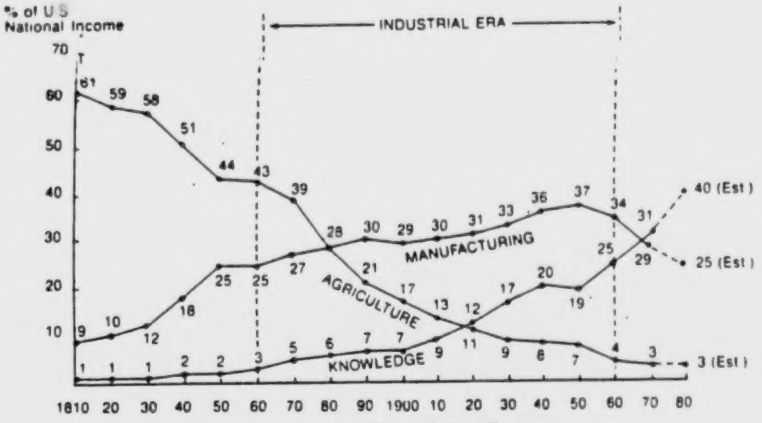
The report is not, therefore, a long range plan. It introduces key trends and issues that must be addresessed by library planners. It is an overture to more detailed discussions about the future of the public library.

USERS OF THE FUTURE

The many speculations about the use of computer technology in the 1990's are underpinned by some consistent views of the decade's demographics, educational needs and business challenges. We know that we can expect a population of aging baby boomers born between 1940 and 1965. One of every 4 Americans will be Hispanic, Afro-American, Asian, or Middle Eastern. There will be an increasing disparity of outlook between generations. An older, more largely white, population will have different public service preferences than a younger, more ethnic workforce. The library will be serving users who need more information to conduct their lives and careers. Convenience of access will be important to these users, but different user groups will have difference access requirements.

ADULT USERS

Adults in the next decade will be working in a a knowledge economy. (See **Figure 1**, Lancaster p.4) "By 2010 virtually every job in the country will require some skill with information processing technology." (Cetron, Class of 2000) Workers need ongoing reeducation. On average, the next generation of workers will make no fewer than five complete job changes in a lifetime, although some of these jobs will evolve from a previous career. (Cetron, 48) Engineers and technical managers will have to recycle back through school about once every 10 years. This need for retraining will increase the corporate stake in education. John Akers, President of IBM, sees a trend toward greater cooperative design and funding of continuing education by colleges and business. In its Job and Career Centers the Library has already seen many patrons who are changing careers. The trends of the 90's suggest that the public library will see more of these adult learners.



The New American Knowledge Economy

Figure 1

By the year 2000 the majority of those entering the workforce will be women or minorities. They will be needed in scientific, technical and other information based careers. Recent studies done in New York City and at the Urbana-Champaign campus of the University of Illinois indicate that minorities and women enter college with less experience in the use of computers. On the University of Illinois campus it was concluded that the university must actively intervene with female students to overcome this gap or it becomes more pronounced. This suggests differences in the way various groups will respond to a more automated library.

The trend toward more two-income couples will continue. One writer suggests that computer communications will lead to the 24 hour work day and the 7 day work week, in which people will select their working times rather than adapt to a 9-5 norm. (Glenn). This suggests that the Library may have more busy users who work non-traditional hours and want to access the library in non-traditional hours.

THE OLDER USER

Most evidence suggests that there will an older America in the 1990's. In Montgomery County it is predicted that users over 50 will be about 27% of the population through the year 2010. Many Americans may work until age 70. While some suggest that busy, but less mobile, elderly users will respond to the convenience of computer services such as computer shopping and health information programs, there are others who stress the computer anxiety of older users. A recent survey by the American Association of Retired People found that one of the reasons corporate management was less committed to using workers over age 50 was that they received low ratings for their ability to cope with new technology. (Swoboda) A study done of online catalog use in 10 university and public libraries indicates that older public library patrons have a proportionally high percentage of non-PAC users. In focus groups older users expressed anxieties about dealing with new technologies: "For our age group, the computer is more intimidating..."; "My daughter was out of patience with my chagrin over the computer catalog...she thought I was abnormal"; and "Older people aren't quite sure how to use the computer, and your pride gets damaged when you try a new technique that you're not familiar with and you see students using it quite easily". (Markey, p. 76-77) This user group will coexist with younger clients with different expectations and more computer skills.

STUDENTS OF THE FUTURE

> "The Class of 2000 will be exposed to more information in one year than their grandparents encountered in their entire lives. They will have to assimilate more inventions and more new information than have appeared in the last 150 years." (Cetron, p63)

It seems certain that information technology will be necessary to cope with this rapidly changing and growing information scene. On one day last fall 2,500 microcomputers were sold to students on the University of Michigan campus. Certainly this affirms the idea that computers will become an 'appliance for life' for most college students educated in the 1990's. Computer aided learning programs are already replacing textbooks. Programs exist today that allow students to study visual perception for a basic psychology course, to 'perform' biology lab experiments without ever entering a wet lab, or to study medical ethics using an interactive video disk which documents a patient's life. These programs use mixed media to enliven learning and artificial intelligence to guide learning.

Parents are beginning to recognize the importance of computer education. Two thirds of the parents in a recent study done in Fairfax County cited computers as among the most important topics their kindergartners should learn about at school. Parents are also judging colleges by the access they provide to computerized information systems and networks which are offered students. "In the last two hundred years the United States has spent a total of $1 billion on textbooks. By 1990, it already will have spent $1 billion on computerizing learning. Two thirds of that will have been spent by affluent parents for their own children." (Cetron p. 54)

POTENTIAL USERS IN MONTGOMERY COUNTY

There is a basis for concluding that Montgomery County residents will be very computer literate and heavy users of microcomputers and computer related information services. This trend will need to be considered when planning County services that are information based, particularly library services.

Students in the Montgomery County Public Schools receive computer literacy education in grades K-12. MCPS is now implementing its second five-year plan for computer-related instruction. A recent study group concluded, "The majority of the county's schools, teachers, children and staff are now ready to take advantage of computer technology in substantial and beneficial ways in learning and teaching." (Schooling in the Information Age, p.2) The school libraries have CD-ROM catalogs for use by students in elementary, middle and high schools, and make heavy use of electronic encyclopedias, such as the Grolier and the World Book, and other products including NEWSBANK and Facts on File on CD-ROM in high school media centers. These are the most heavily used of the approximately 20 titles that MCPS has acquired on CD-ROM. High schools also offer online search services to students with appropriate projects.

The Quince Orchard High School has seven interconnected local area networks, placing electronic information about school programs, class schedule information and administrative computing support in all classrooms. The library network offers access to the library catalog in all classrooms and to other databases on CD-ROM using file server with 16 CD ROM drives. The librarian at Quince Orchard can use a fully equipped computer lab to give instruction on the use of these electronic information tools. The school is also implementing dial-up services so that students can use the network afterschool at home. The new Watkins Mill High School is designed on this model. The networks at this high school are being planned to support both IBM (MS-DOS) and Apple/MacIntosh machines. All high school media centers will be moving toward the Quince Orchard/Watkins Mill prototypes. Local area networks with dial-up capabilities from the homes of students will be gradually phased in at these media centers. (Worsley Interview)

In a survey of large school districts MCPS ranked 19th in the United States in the ratio of students to computers, 18.9, and 10th in the number of computers in use, 5,048. (Quality Education Data, May 1988 in Computer Industry Almanac p.7.9) MCPS estimates that in some upcounty schools well over 50% of the students have personal computers in the home, and that about 40% of these have modems.

Montgomery College administrators and the employers who advise them are aware of the need for computer literacy. They expect that students educated in the Montgomery County Schools will be computer literate. The Library Department expects that these same students will be information literate adults who will look for the electronic research tools in the public library that they were accustomed to using in high school and in college.

In the December 1989 of CATALYST the Montgomery County High Technology Council recognizes the link between information technology and the professionals being recruited into the County in biotechnology and in other high tech businesses. They called for a feasibility study for a Maryland Information Technologies Center, saying that "...the U.S. and the world are at the beginning of what is becoming recognized as a new revolution in information technology applications made possible by the introduction of an entirely new generation of telecommunications capabilities." They note that the growth of LANS and private data networks has produced a "need to interconnect some of these networks together so that a terminal in a given LAN can communicate over a wide area network to a computer in a different LAN." The proposed Center would act as a "network interface to a common carrier digital switch laboratory." Among the activities of a prospective Center would be the maintanance of product and services databases and the education of users in technologies and their applications, using interactive media. (CATALYST, August 1990, p.4) The public library will probably not provide scientific information to the users the Council has in mind, but this user group will have the means and the desire to use automated library systems when seeking other information.

Another indicator of Montgomery County as a market for computer technology comes from national market surveys. The LIFESTYLE MARKET ANALYST profiles 212 markets defined by Arbitron as Areas of Dominant Influence. The profiles are based on a sample of 18 million questionnaires packaged into a variety of consumer goods and received over a period of May 1986-October 1988. These surveys cover 57 lifestyle interests and activities including 'personal/home computers' and 'science/new technology'. In Montgomery County these two lifestyle are ranked 5th and 6th. What is most striking is that Montgomery County's index ranking for 'personal/home computers' of 164 exceeds the ranking for metro Washington ADI ranking of 146. Yet this 146 ranking is the second highest nationwide ranking for the 212 ADI marketplaces. 63,707, or about one quarter of the households in Montgomery County reported interest in personal computers. Washington ranks 10th for interest in science and new technology, and again the separate index for Montgomery County is 33 points higher than the Washington area as a whole. Although it did not make the top ten ranking for Montgomery County, 'avid book reading' was reported by 118,388, or about 45% of Montgomery County households. The 'avid book reading' index for Montgomery County is 124, just one point below the ADI market ranked first in the Country.

USERS IN A 'SMART' WORLD

In a recent speech D. Alan Bromley, the Science Advisor to the President, compared the Information Age, now in its infancy, with the Industrial Revolution saying that "nothing could have stopped it" and that it "changed the entire face of society". The Information Age is "now more farreaching, is largely unrecognized and cannot be stopped".

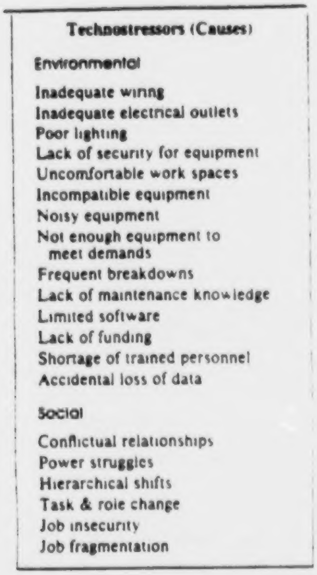
Information users of the future will be surrounded by portable and intelligent technologies. In AMERICAN RENAISSANCE Marvin Cetron sees eight supergrowth markets for business at the turn of the century. They include cellular telephones, fax machines, home satellite dishes and laptop computers. These predictions are echoed elsewhere. "There were 1.3 million fax machines in use at the end of 1988. By 2000, manufacturers will sell 20 million to 25 million more." There will be "1.2 million (laptops) in use at end of 1988." In only four years the number will climb to 8 million. Cetron predicts they will begin to replace desktop pcs for all but the more high powered applications. (Cetron, p.245)

Jerome Glenn imagines a future man opening his tree of knowledge attache case in the middle of the desert. It will be a portable scientific workstation containing a computer, video, biological sensors, modem, satellite transceiver and programming which allows the user to analyze mental and physical status. This does not seem so unreal when you read Brit Hume's account of writing, researching, editing and transmitting both video and hardcopy while on a trip with President Bush in Nebraska in the October 1989 issue of PERSONAL COMPUTING.

Glenn makes other farreaching statements about an automated future calling our cyborgization "a straight trend forecast" mentioning nerve chips and technology transplants for neural systems.(p.107) He predicts that what was once dumb matter will be conscious technology in the next generation. Like Robert Bezold at the World Future Society meeting, he discusses the smart house. This home would have an electronic interface between a microcomputer and household systems such as the burglar alarm, heating, lighting, and air conditioning. In Outlook '90 and beyond, the FUTURIST magazine presents an array of similar apparatus: smartcards, household robots, smart furniture, and robotic lawn mowers. In summary, computer chips in everything!

TECHNOSTRESS

Obviously, this could be quite a stressful future. Libraries will need to draw on their tradition of friendly service. When automated systems are introduced to staff and to end users, the library will need to recognize not only the special needs of user groups such as the elderly, but the general phenomenon of stress associated with the inability to cope with new technology. Individual responses to automation vary. One source suggests that in any organization there will be three groups: acceptors (10%); receptors (40%) and resistors (50%). (Segmenting the Information Services Market, np) Sarah Champion suggests four types of staff response: the resister, who denies the new and values the old; the experimenter, who tries new ideas scientifically; the lover, who tries and loves anything new; and the manager, who plans and uses technology selectively.(Champion p.49) She also provides a good list of the causes of techostress. **(Figure 2)**



Technostressors (Causes)

Environmental

Inadequate wiring
Inadequate electrical outlets
Poor lighting
Lack of security for equipment
Uncomfortable work spaces
Incompatible equipment
Noisy equipment
Not enough equipment to meet demands
Frequent breakdowns
Lack of maintenance knowledge
Limited software
Lack of funding
Shortage of trained personnel
Accidental loss of data

Social

Conflictual relationships
Power struggles
Hierarchical shifts
Task & role change
Job insecurity
Job fragmentation

Figure 2

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INFORMATION TECHNOLOGY

There is technology already out there that provides options for the Library's five to ten year future. Because the library world is not the primary market for the development and demonstration of information technology, there are places where the use of information technology already leads the public library scene by at least five years. This is especially true in universities and some corporate settings. Futurists at the July 1989 meeting of the World Future Society, college administrators and major computer corporations at EDUCOM in October of 1989 and information scientists at ASIS in November had some clear messages about information storage and dissemination. (Notes on these meetings appear in the List of Sources) Models from these settings suggest where library systems need to develop.

END USER SYSTEMS

There are or will be automated tools to support many library missions. Not all of the information technology being introduced today is related to higher level information service. At EDUCOM, for instance, **INFONET**, a network of terminals in about 30 locations in metro Ann Arbor supplied orientation information to the 3,000 attendees. The IBM terminals on this network combined: touch screens; interactive video; sound; animation; and print capability. These terminals were easy to use and aimed at 'the man in the street', who might use them without necessarily realizing that he was dealing with a computer. Here in Washington an interactive program with text, graphics and maps is being used to guide visitors to the Library of Congress to collections, exhibits and programs. This kind of product could be used in any large, busy library to introduce children and other new patrons to the library providing: an animated map of the library and the book collection; a video welcome by the Library Director; an illustrated introduction to other library branches and special services; and information about current library public programs. This would be a way to provide standard orientation information to users, freeing staff to work with users needing other kinds of help.

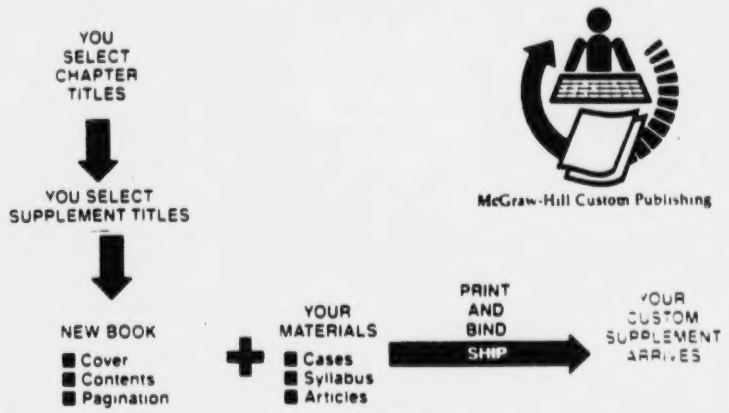
Like the EDUCOM network and the LC information package, most information products will be designed for direct use by the end user. They may combine video, sound and graphics with text. The design of systems will focus more on user interface, perhaps making these as important as the construction and indexing of the database content. They will use sophisticated programming, hypertext, and artificial intelligence to bolster ease of use and enhance the chances of finding satisfactory results. There will be greater interaction between the system and the user. At the University of California at Berkley a public access catalog has been designed which takes the index terms supplied by users and matches them to clusters of similar titles in the collection. The system then presents alternative terms and suggestions for revising the search request to the user. There is also research on how children categorize things as a foundation for making electronic catalogs more accessible to younger users.

CUSTOMIZED INFORMATION PRODUCTS

Many predictions about the marketplace in the 90's point to a future in which products are more customized, are developed and delivered more quickly and have a shorter product life. In the future large stocks of standardized retail products may give way to products which are tailored to individual specifications and delivered quickly. Electric companies are planning a future in which information networks are used to collect detailed data about the use of electricity by individual customers and as a result to regulate the pricing and delivery of electricity more closely. This kind of product and distribution cycle is predicated on the existence of more sophisticated information technology that allows the rapid collection and integration of supply and demand information and the flexibility to customize products to small groups of users or even individual users.

Clients for information services will also want increasing customization of inquiry and of information products in the future. McGraw-Hill, a major publisher of science and technology literature has just introduced a service that recognizes this trend, **McGraw-Hill Custom Publishing**. This service allows college instructors to select chapters of books published by McGraw Hill, order and title them to fit the course of instruction, and add their own cases, syllabus and articles to form a book tailored to a particular course. This 'book' will be delivered "within a few days" of order placement. (See **Figure 3**). Medical and other texts will amplify the learning experience by combining conventional text and diagrams with images and sound. These new materials will present a challenge to the traditional library cataloging and collection development.

People who obtain information from electronic sources will want to adapt it for personal use: filing it in a personal database; reorganizing statistical data in their own tables; making calculations on numerical data; and creating their own reports. These same users will benefit from automatic searches which regularly browse databases against their individualized information profile. The Library expects users of the 1990 census data, to be distributed on CD-ROM, to be among the first users to want these capabilities in the library setting. Society needs the contributions of these more information literate citizens and needs libraries which support them.


YOU SELECT CHAPTER TITLES
YOU SELECT SUPPLEMENT TITLES
NEW BOOK
■ Cover
■ Contents
■ Pagination
YOUR MATERIALS
■ Cases
■ Syllabus
■ Articles
PRINT AND BIND
SHIP
YOUR CUSTOM SUPPLEMENT ARRIVES
McGraw-Hill Custom Publishing

McGraw-Hill Custom Publishing
Figure 3

WORKSTATIONS OF THE FUTURE

Information seekers will need more linkage between applications which can produce and manipulate information, such as spreadsheets, word processing, database management tools, and electronically stored bibliographic and full text databases. Scientists and engineers in universities and business may be the first to operate in this environment. Workstations will be more powerful with more of the computing work being done at the workstation rather than the mainframe level. Predictions for the change in workstations by 1993 are shown in **Figures 4 and 5**. (Computer Industry Almanac, 3.68 and 3.69)

Wang introduced an office automation system last year which allows the user to integrate voice mail, handwritten comments, text and spreadsheets for transmission to a colleague. A scanner, direct output to fax and digitizing pad are standard equipment.

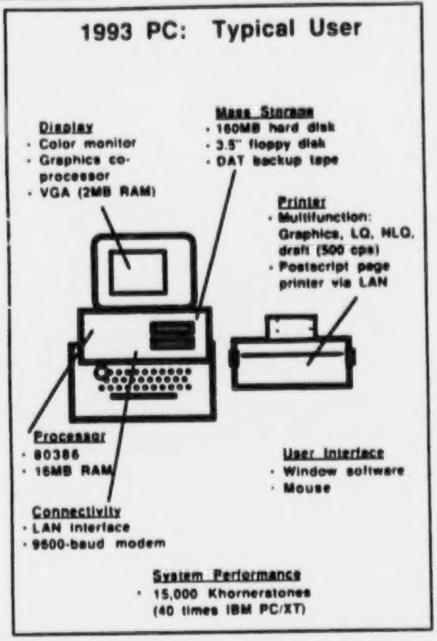

1993 PC: Typical User
Display
· Color monitor
· Graphics co-processor
· VGA (2MB RAM)
Mass Storage
· 160MB hard disk
· 3.5" floppy disk
· DAT backup tape
Printer
· Multifunction: Graphics, LQ, NLQ, draft (500 cps)
· Postscript page printer via LAN
Processor
· 80386
· 16MB RAM
User Interface
· Window software
· Mouse
Connectivity
· LAN interface
· 9600-baud modem
System Performance
· 15,000 Khornerstones (40 times IBM PC/XT)

Figure 4

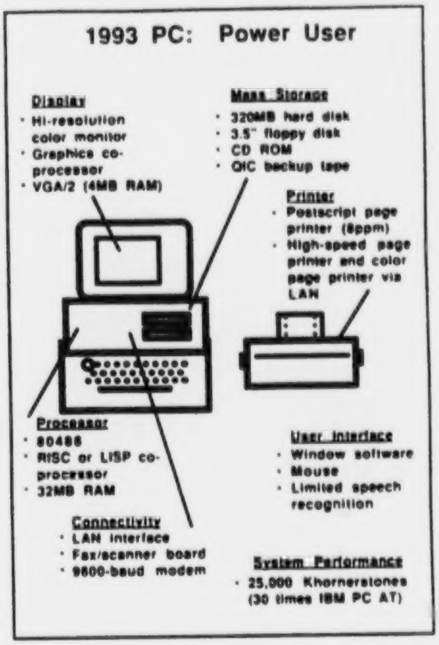

1993 PC: Power User
Display
· Hi-resolution color monitor
· Graphics co-processor
· VGA/2 (4MB RAM)
Mass Storage
· 320MB hard disk
· 3.5" floppy disk
· CD ROM
· QIC backup tape
Printer
· Postscript page printer (8ppm)
· High-speed page printer and color page printer via LAN
Processor
· 80486
· RISC or LISP co-processor
· 32MB RAM
User Interface
· Window software
· Mouse
· Limited speech recognition
Connectivity
· LAN interface
· Fax/scanner board
· 9600-baud modem
System Performance
· 25,000 Khornerstones (30 times IBM PC AT)

Figure 5

The Library of Congress's American Memory Project plans to make cataloging, pictures and full text of many of its historical collections available on a stand-alone microcomputer workstation which will retrieve items from two types of disks: compact disks that contain digital information and television videodisks that contain analog video signals. Students at libraries around the country will be able to browse collections formerly available only by visiting Washington.

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An Apple Library of the Future project of Personal Bibliographic Services put together an **Apple scholarly workstation**. This workstation would allow online searching in commercial databases like DIALOG, in large union library databases like OCLC, CARL or MICROCAT. It would allow the user to attach frequently used databases on CD-ROM to his workstation. Users could take information from these sources and create a customized database. Documents and programs would be sent electronically to the workstation and stored on hard disk. They could be output to a fax machine. The workstation would have desktop publishing capabilities. This workstation was demonstrated using all Apple hardware including a MacIntosh 4/40 with 4 MB hard disk, a CD player, a scanner, a laser printer, a fax modem, a 1200 baud modem and Appletalk Network communications. This package costs approximately $17,500. Three years ago it would have cost approximately $100,000.

Project Mercury, being developed by Carnegie-Mellon, is a project being developed with current technology in which an electronic network will be the library. Its goal is to place bibliographic databases and document databases nationwide at the disposal of the researcher, allowing scholars to search and study documents on computers in their offices. In addition it would allow groups of researchers at different universities to exchange information and scholarly papers electronically, capturing documents directly from authors. The project envisions a future in which knowledge would be developed through electronic interchange, independent of the present system of scholarly publishing in print. Academicians and librarians are already discussing the impact of such innovation on scholarly review and on the bibliographic control of knowledge.

NETWORKS

These scholarly workstations presuppose an infrastructure of electronic networking. They call for networks which support powerful workstations with various operating systems in a way that is transparent to the user. There are many examples of network development on college campuses. The University of Michigan demonstrated a network which allows users with UNIX, Apple and IBM workstations to access and to download from large university files stored on three mainframes and from remote hosts in October 1989. At the University of Michigan students and faculty can access the Library catalog, **MIRLYN**, on the existing **UMNet**. Using the network's E-Mail utility, users of MIRLYN with campus mailboxes may request 24-hour delivery of materials located in the catalog. Reference questions may also be asked using E-Mail. The Library is the largest user of campus E-Mail. The **Library 2000 Project** at Georgia Tech allows students in their dorms to search databases to support study. Databases include the library catalog, periodical indexing and leased commercial databases. Georgia Tech's LENDS service delivers materials to faculty offices twice daily. Since the Library 2000 project began LENDS requests have increased 40%. (Drake) The University of Maryland is scheduled to complete its "Fiber Campus" project by August 1990. This system will combine a new campus telephone system, new campus wiring, voice mail, coaxial cable for video distribution and fiber optic cable for current and future high speed data communication. It will serve 15,000 worksites.

One of the few major pieces of federal information technology legislation is the **High Performance Computer Act of 1989**, which would develop an **National Research and Education Network** with capacity five times greater than the current networks. "Like the interstate freeway system, the network is an infrastructure for the benefit of all Americans. And like the interstate freeway system, the network will require leadership by the Federal government..." (Sen. Albert Gore in NREN, p.1) NREN would link supercomputers and large scientific databases across institutional (business, government, education), disciplinary and geographic barriers. It would allow advanced technological tools for manipulating information and for producing complex visual representations to be sent to and from research workstations. The present legislation is being rewritten to include more references to library participation.

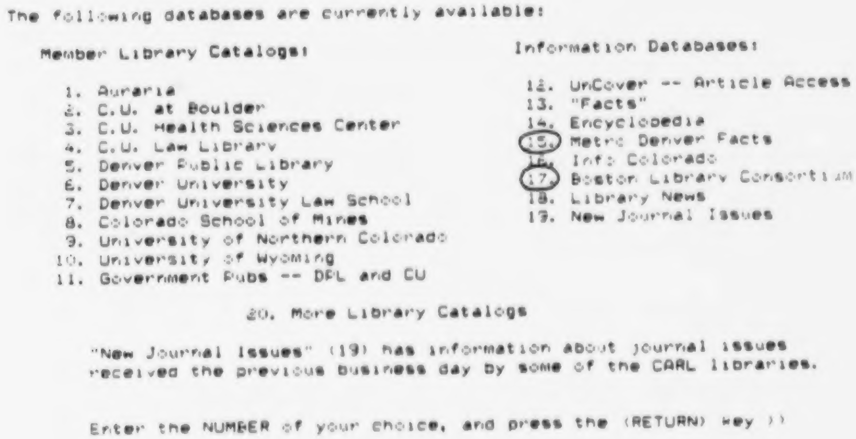
The proposed **Maryland State Library Network** recommends a dedicated state telecommunications system which would support direct access to statewide union catalog of library holdings, to the electronic community information files in various localities, to an electronic bulletin board with calendaring capability, to publicly funded government databases in the state, and to gateway connections to commercial databases.

Washington Suburban Sanitary Commission in cooperation with Maryland counties and planning agencies is piloting a **GEOBASE** for planners that would contain planning information useful to the larger community. This kind of government funded database might be a candidate for some level of public access through the Library. The County is moving toward interconnection of the government center 'campus'. A token ring backbone is being developed in the Executive Office Building, which will allow the interconnection of local area networks in departments and the IBM mainframe. Access to the IBM Information Network through the County mainframe is being explored.

Metro Denver Facts, is a regional network in the Denver-Boulder area, which began in 1987. CARL Systems, Inc. provides a host for this file. It is also available on the Denver Public Library PAC terminals. The file contains regional demographic and socio-economic data related in six counties and electronic news and mail to forty-nine economic development organizations. Neal Pierce, columnist for the Washington Post, has called the METRO DENVER model "state of the art, intensely competitive, a measure of where other metropolitan areas will have to head". This project was the recipient of the prestigious Arthur D. Little Award for Excellence in Economic Development. Metro Denver is credited with the recruitment of 10,459 primary jobs to this area in 1988. The Library is exploring the development of a similar regional business and economic database with the Office of Economic Development and other organizations which provide service to business. Such a database might make 'electronic' statistical information now scattered through printed County documents, and offer a much needed directory of local companies. The Metro Denver information database and others and the catalogs of CARL system libraries are available on **INTERNET**, a national telecommunications network.

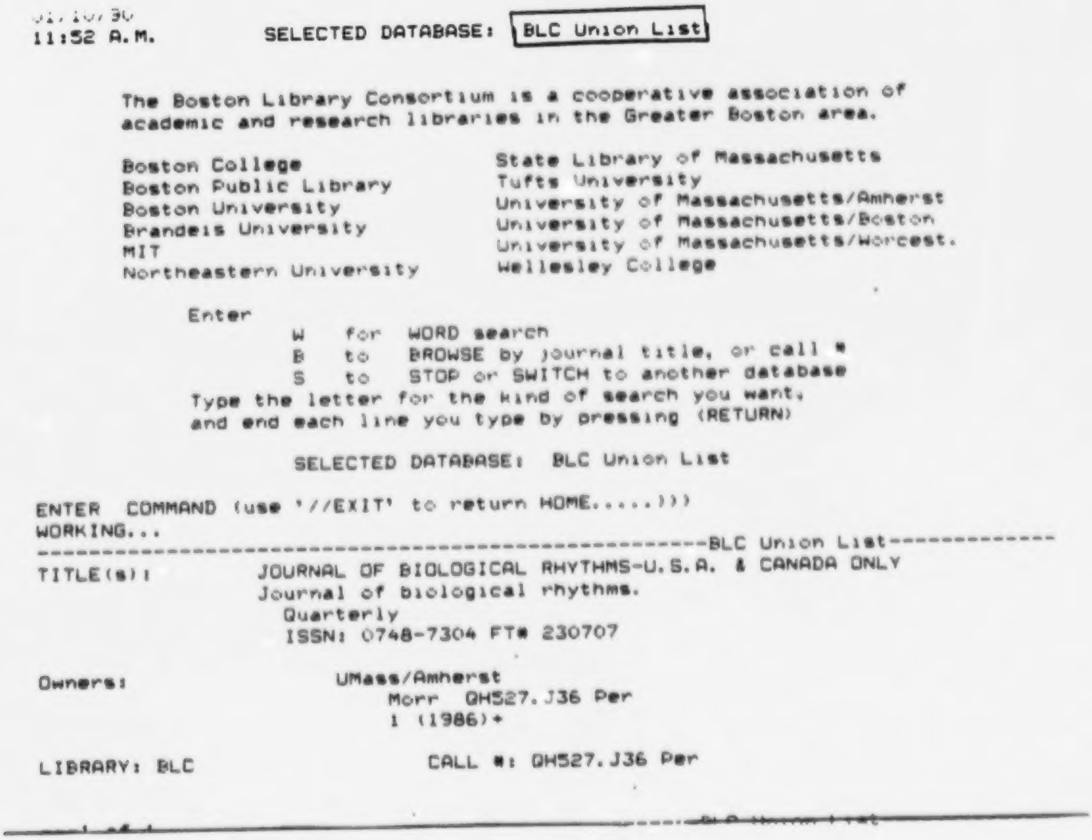
> Library information systems, if reconceived in modern telecommunications environments, can become portals to rich and diverse information sources that could never replicated in home collections or in local computers. Yet the accessibility to this resource would have immense impact on user conception of how our intellectual heritage is organized. If these systems are thoughtfully and sensitively re-executed, it is possible that they could become an active, rather than a passive, contribution to the education process. (Patricia Culkin, CARL, quoted in Boss, p. 641.)

CARL Information Systems, Montgomery County's library system developer, offers the power of network access to the clients of its member libraries. The 'Metro Montgomery' database, discussed above, is but one example of the kind of enhanced information packages which could be offered locally on the library's CARL Integrated Library System network. A community information database is now in development, and an electronic encyclopedia could easily be added to such a network. Montgomery County as one of CARL's member libraries, already has access to databases in other locations via the CARL network. Using the Library's public access catalog, these features can be accessed. By selecting Item 2 on the screen that begins: "The database of UNCOVER". (UNCOVER is a database containing more than 500,000 citations from nearly 10,000 titles from 1988.) The next screen will be **Figure 6**. From this screen you can search for information in most of the libraries and informational databases listed. The examples shown are journal holdings from the Boston Library Consortium (**Figure 7**) and a detail from Metro Denver Facts, which is discussed above (**Figure 8**).



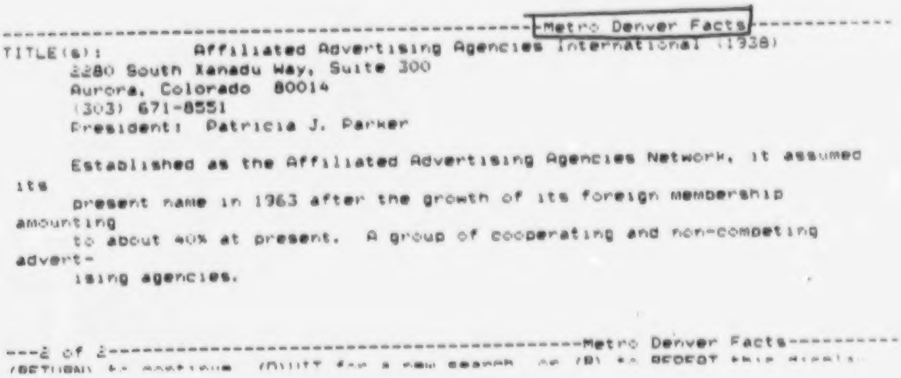
```
The following databases are currently available:

   Member Library Catalogs:                      Information Databases:

      1. Auraria                                   12. UnCover -- Article Access
      2. C.U. at Boulder                           13. "Facts"
      3. C.U. Health Sciences Center               14. Encyclopedia
      4. C.U. Law Library                          ⑮. Metro Denver Facts
      5. Denver Public Library                     16. Info Colorado
      6. Denver University                         ⑰. Boston Library Consortium
      7. Denver University Law School              18. Library News
      8. Colorado School of Mines                  19. New Journal Issues
      9. University of Northern Colorado
     10. University of Wyoming
     11. Government Pubs -- DPL and CU

                   20. More Library Catalogs

        "New Journal Issues" (19) has information about journal issues
        received the previous business day by some of the CARL libraries.


        Enter the NUMBER of your choice, and press the (RETURN) key >>
```

Databases Available Through CARL Network
Figure 6



```
[illegible]
11:52 A.M.          SELECTED DATABASE: BLC Union List

        The Boston Library Consortium is a cooperative association of
        academic and research libraries in the Greater Boston area.

        Boston College                State Library of Massachusetts
        Boston Public Library         Tufts University
        Boston University             University of Massachusetts/Amherst
        Brandeis University           University of Massachusetts/Boston
        MIT                           University of Massachusetts/Worcest.
        Northeastern University       Wellesley College

             Enter
                    W   for  WORD search
                    B   to   BROWSE by journal title, or call #
                    S   to   STOP or SWITCH to another database
             Type the letter for the kind of search you want,
             and end each line you type by pressing (RETURN)

                    SELECTED DATABASE:  BLC Union List

ENTER  COMMAND (use '//EXIT' to return HOME.....)))
WORKING...
-----------------------------------------------BLC Union List-------------
TITLE(s):          JOURNAL OF BIOLOGICAL RHYTHMS-U.S.A. & CANADA ONLY
                   Journal of biological rhythms.
                     Quarterly
                     ISSN: 0748-7304 FT# 230707

Owners:                 UMass/Amherst
                            Morr  QH527.J36 Per
                            1 (1986)+

LIBRARY: BLC                    CALL #: QH527.J36 Per

[illegible]
```

Holdings of Other Member Libraries on CARL Network
Figure 7



```
------------------------------------------Metro Denver Facts-------------
TITLE(s):        Affiliated Advertising Agencies International (1938)
       2280 South Xanadu Way, Suite 300
       Aurora, Colorado  80014
       (303) 671-8551
       President:  Patricia J. Parker

       Established as the Affiliated Advertising Agencies Network, it assumed
 its
       present name in 1963 after the growth of its foreign membership
 amounting
       to about 40% at present.  A group of cooperating and non-competing
 advert-
       ising agencies.


---2 of 2----------------------------------------Metro Denver Facts----------
[illegible]
```

Metro Denver Facts Detail, CARL Network
Figure 8

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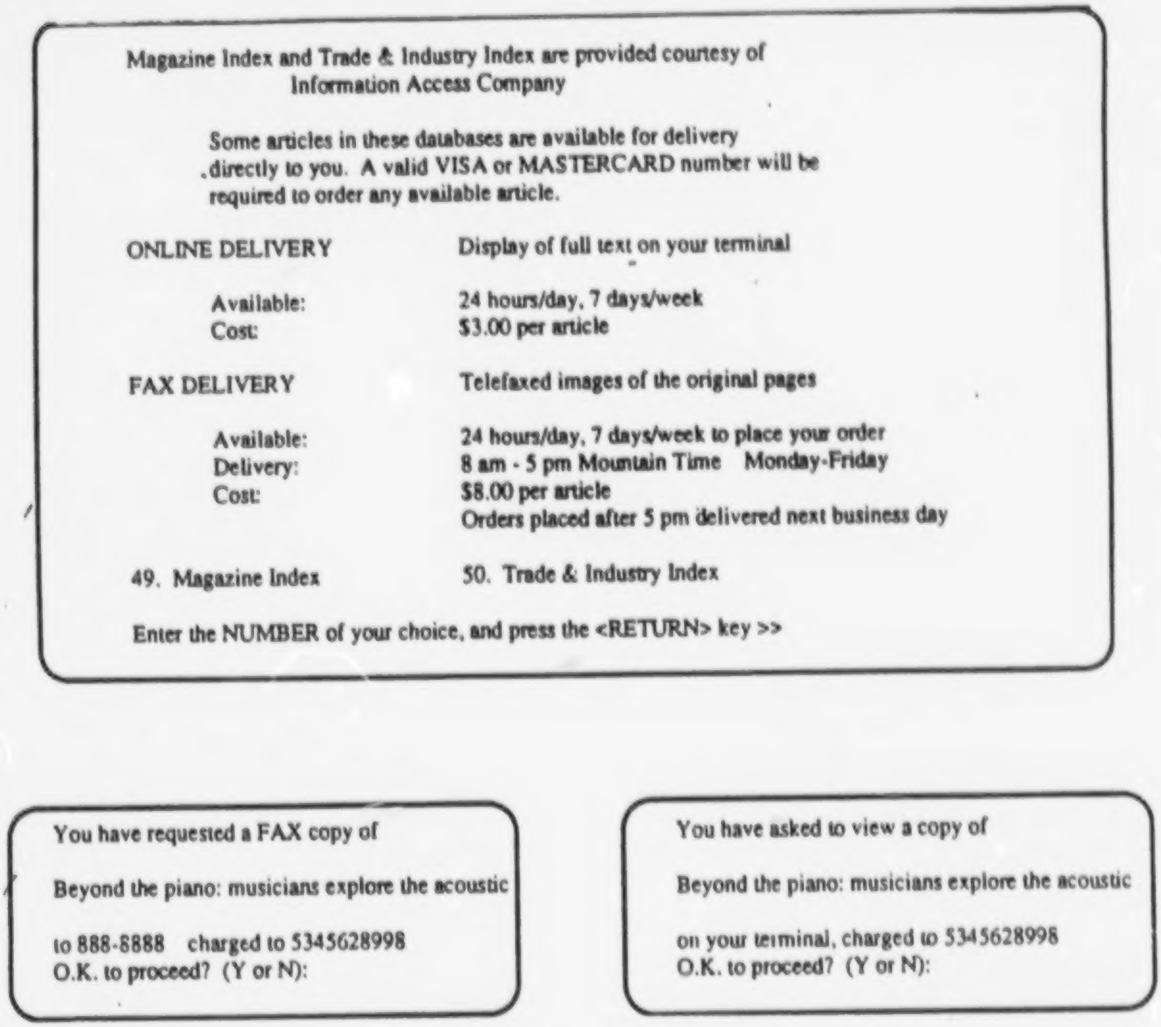
Integrated systems like CARL offer libraries the capacity to add other services to their in-house networks. CARL offered four Information Access databases to its West Coast customers in 1989: Magazine Index, Trade and Industry Index and the related fulltext ASAP files. The service to CARL network users is further enhanced by a fee based document delivery option, which allows users to retrieve the fulltext of relevant articles online or via fax. **(Figure 9)** The Department expects to be offered this option in 1990. In Montgomery County MAGAZINE INDEX periodical indexing is available only via DIALOG, or at standalone microfilm and CD-ROM workstations at five libraries. The department does not have a comparable document delivery system for articles at this time.



Magazine Index and Trade & Industry Index are provided courtesy of
Information Access Company

Some articles in these databases are available for delivery directly to you. A valid VISA or MASTERCARD number will be required to order any available article.

ONLINE DELIVERY	Display of full text on your terminal
Available:	24 hours/day, 7 days/week
Cost:	$3.00 per article
FAX DELIVERY	Telefaxed images of the original pages
Available:	24 hours/day, 7 days/week to place your order
Delivery:	8 am - 5 pm Mountain Time Monday-Friday
Cost:	$8.00 per article Orders placed after 5 pm delivered next business day
49. Magazine Index	50. Trade & Industry Index

Enter the NUMBER of your choice, and press the <RETURN> key >>

You have requested a FAX copy of

Beyond the piano: musicians explore the acoustic

to 888-8888 charged to 5345628998
O.K. to proceed? (Y or N):

You have asked to view a copy of

Beyond the piano: musicians explore the acoustic

on your terminal, charged to 5345628998
O.K. to proceed? (Y or N):

Document Delivery Request Screens
Magazine Index Database - CARL Network
Figure 9

ONLINE SEARCHING

Online searching is a large part of what will be happening on networks. Online searching has been around for over twenty years. Montgomery County librarians have provided online search services since 1979. In FY90 about 250 searches were done for patrons each month. The development of this program and the unique power of online searching have been discussed in other reports. The importance of online databases as a source of the most current information about business, science and technology will probably increase in the 1990's when corporations and researchers will need to respond quickly to a fastpaced marketplace. NTIS, the National Technical Information Service, has found, for instance, that its sales of print and microfiche products has dropped up by 50% while use of the NTIS database climbs. To demonstrate the unique information which some of today's online databases might offer business persons in Montgomery County **Figure 10** includes descriptions of a few databases and database information which have no affordable print counterpart for the Library Department.

EXAMPLES OF ONLINE BUSINESS DATABASES

BIDNET DATABASES BidNet a company of the Dun & Bradstreet Corporation has just announced a group of databases to be added to DIALOG (File 584 and 585) that will cover state and local government bidding opportunities. BidNet will provide up-to-date, accurate information in more than 6,500 product and service categories from 1,800 of the largest state, local and school purchasing offices in this $200 billion government market.

BIOCOMMERCE ABSTRACTS This database indexes over 100 journals, newsletters and newspapers and provides up-to-date abstracts news items concerned with the business aspects of biotechnology and the commercial applications of the biological sciences. Regarded as a good source for competitor analysis and business planning in this field and for those interested in technology transfer.

PTS PROMT Predicasts Overview of Markets and Technology abstracts information from thousands of newspapers, business magazines, government reports, bank letters and other special reports. It contains abstracts of regional business news and of corporate research reports prepared by investment analysts. PROMPT provides information on new products, international trade and market data. The database is updated daily through another file PTS PROMT DAILY and is complemented by PTS NEW PRODUCT ANNOUNCEMENT/PLUS, which contains the full text of press releases from all industries covering announcements related to products.

FIGURE 10

CD-ROM DATABASES AND RELATED PRODUCTS

Databases on CD-ROM are a rapidly growing segment of the library reference market and an information technology, that regardless of its long-term future, will have high impact on library service in the near-term future. In 1989 there were 1,442 CD-ROM titles; the number of titles more than doubling in one year. The leading category for titles was reference, followed by geography, medicine, law, and business. Most titles in print are in the MS DOS standard. There are now third party vendors that supply CD-ROM products. EBSCO, a leading magazine subscription agent, is now offering subscriptions to CD-ROM databases in 65 different subjects, as a routine part of its service. Worldwide sales for CD-ROM industry will reach $865.5 million in 1989 up from $381.4 million in 1988. 76% of the 1989 revenues are for the sale of software. The number of installed CD-ROM players is expected to move from 168,000 in 1988 to 471,000 readers in 1989 and 1.1 million in 1990. Total CD-ROM revenue is expected to double in 1990. "The potential for displacement or damage to CD ROM as an information delivery medium by any competitive technologies is regarded as non-existent for the forecast period and beyond...," (Optical Publishing Industry Assessment 2-CD-ROM 1986-1990. Optical Publishing Association, 1989 as cited in ADVANCED TECHNOLOGY LIBRARIES, October 1989)

The CD-ROM format allows libraries to extend their information coverage and to offer many of the benefits formerly available only through online searching, directly to end users. They have the following advantages to these users:

- a large volume of information often published over many years in many volumes and in print may be searched in one operation which takes only minutes
- no citations need be written by hand, what is displayed on the screen can be easily printed
- searching is easy, often easier than using comparable printed sources, and powerful. Citations and/or text can be searched using more terms, combined terms, truncated terms and terms which limit the search by year, geography and other characteristics
- search time is not being charged, the more a CD-ROM database is searched the lower the cost per use, users do not have "a meter ticking".
- searching CD-ROM databases is an excellent way for newcomers to electronic information to experience its power at a low per use cost

Below in **Figure 11** are some CD-ROM databases just released which would particularly strengthen the Libraries information resources in areas of proven use based on our current pattern of inquiries. Please note **BUSINESS PERIODICALS ONDISC**, one of several CD-ROM products introduced in the last two years by University Microfilms, the leading publisher of journal, newspaper and book microforms in the United States. It is an example of a product that combines database searching, the development of a bibliography and retrieval of the full text documents identified.

EXAMPLES OF RECENT CD-ROM PRODUCTS

AMERICAN BUSINESS DISK $1,795

Basic information about 8,300,000 businesses compiled from yellow pages and published on one disc. Searchable by name, zipcode, yellow page classification, SIC codes, brand/franchise information. Updated twice annually.

BUSINESS PERIODICALS ONDISC $19,900

A complete business information workstation which combines the ABI/INFORM index, one of the online databases most heavily used by the Library, with the full text storage and retrieval of 300 magazines most often requested by users of the ABI/INFORM database. At this workstation a subject bibliography can be retrieved and printed and the full text of articles can be retrieved and read and/or printed. Would substantially increase the business information seeker's ability to locate to business information and to immmediately retrieve articles in business magazines not now in the collection as well as provide immediate, alternate access to articles in circulating journals now owned in hardcopy. A debit card reader or coin box can be added allowing recovery of costs up to $5,000 per year by charging for prints. Publisher is making additional products available in this configuration.

CD GUIDE OPTICAL EDITION

Contains audio listings, music reviews, audio samples of the music, images, and articles about recordings and recording industry. Searchable by name, title, artist or disc catalog number.

CITY/COUNTY DATA BOOK 1988

CD-ROM release of the data in the printed source by Bureau of the Census. Distributed to some federal depository libraries.

COMPTON'S MULTIMEDIA ENCYCOPEDIA $795

Encyclopaedia Britannica's entry in the electronic encyclopedia market which takes a step forward in design, combining the power of online searching of text with color, motion and sound. Includes 15,000 illustrations and 60 minutes of audio and the 60,0000 word Merriam-Webster Intermediate Dictionary. Can be searched by article title, free-text, topic tree which organizes related articles. Picture and map information may be searched for separately. The library is already piloting the use of the New Grolier Electronic Encyclopedia also widely used in MCPS. World Book shipped an in December 1989.

FACTS ON FILE NEWS DIGEST $770

"The news of the decade...in one place...in one minute." Provides full text of Facts on File news articles and indexes for 1980-88. At the end of the year a new cumulated disc will be issued which includes 1980-1989 ($195). Users could develop very quickly a detailed who, what, when and where summary of developments. Such a summary could take hours or days off research time and guide users in creating a comprehensive final product. This title is one of the most heavily used CC-ROM databases at MCPS.

FEDERAL PRIME CONTRACTS $2,650

Annual records of over 400,000 federal contracts to over 30,000 companies. Each record contains information on the contractor, purchasing office, nature of the work or service, type of business and amount of obligation. Information about federal contracts and contractors is routinely sought by users of the Selected Federal Depository at the Rockville Regional Library

MITCHELL ON-DEMAND REPAIR INFORMATION SYSTEM $2,400

100,000 pages of Mitchell publications on automobile repair are accessed using simple touch screen menu. User can locate service bulletins, schematics, diagrams for domestic and import cars, light trucks and vans of many years, bypassing lookups in multiyear runs of complicated hardcopy auto repair manuals. Diagrams can be enlarged by zooming in and then printed for the user.

PUBLIC DOMAIN SOFTWARE ON FILE (Facts on File)	$195
APPLE II PUBLIC DOMAIN SOFTWARE	$195
BERKELEY MAC USERS GROUP	$99
C LIBRARY	$99

By adding a CD-ROM to one or more of the public access microcomputers the Department already has these and other similar collections of public domain software and shareware could be used to provide a wide range of useful programs for downloading and use to home computer users. This service has been requested, but has heretofore involved labor intensive software collection development which the Library has been reluctant to undertake.

SCITECH REFERENCE PLUS $995

Database combines all sci/tech book references from BOOKS IN PRINT, all sci/tech periodical references from ULRICH'S INTERNATIONAL PERIODICAL DIRECTORY, the complete text of the AMERICAN MEN AND WOMEN OF SCIENCE multivolume set and of the DIRECTORY OF AMERICAN RESEARCH AND TECHNOLOGY and listings of U.S. technology firms and subsidiaries from the CORPTECH directory. The CD-ROM cost is comparable to the cost of the printed editions of the last three works, which are now owned in only one location in the library system.

Figure 11

LOCAL AREA NETWORKS

Local area networks allow users with microcomputers in the same building or unit to share programs, files and peripherals such as CD-ROM drives and printers. The introduction of CD-ROM databases to public libraries has encouraged them to consider local area networks even though CD-ROM technology and products present many problems for network planning. The licensing fees for network use of CD-ROM products are quite high when compared to standalone subscription fees. Annual costs can be several thousand dollars more for each database mounted on a small network. Networking software and hardware add to the cost of implementing a network. CD-ROM response time is slow. It is not clear currently how many users a CD-ROM local area network can comfortably support. Most LAN's also require considerable staff time for network administration onsite. The CD-ROM storage medium does not seem likely to be connected to larger networks. Yet, new CD-ROM networking software and equipment is being introduced; LAN's related to CD-ROM applications are being implemented, and CARL is experimenting with linking CD-ROM databases to its network.

The **New York Public Library's Economic and Public Affairs Division** offers the largest publicly available machine-readable information in the world at its Electronic Information Center. The Division receives support from many large corporations, and 40% of its 91,000 users are business persons. The Electronic Information Center includes many networked CD-ROM products. The U.S. Department of Education has just awarded a grant to the **University of Houston** libraries to create an Intelligent Reference Information System (IRIS). This system will combine networked CD-ROM databases and expert systems. Howard County Central Library has a LAN funded by grants from the Washington Post and Clyde's Restaurant Group. On **Howard County's INFOLAN** nine informational databases are available on six public workstations. They include: the Grolier Electronic Encyclopedia; Periodical Abstracts, covering 300 magazines; Newspaper Abstracts; Corporate and Industry Research Reports; ERIC; PDR; MEDLINE; and the Microsoft Bookshelf and Small Business Consultant. Montgomery County Public School high school libraries are also making extensive use of local area networks which are discussed later in this report.

DESIGN CONSIDERATIONS FOR BUILDINGS

Clearly this review indicates a change in library development as automated systems link libraries to other libraries and link information users inside and outside the library building. The library must accommodate electronic online catalogs, network connections, databases stored on optical disk storage media, and office automation. The total electrical load requirements for a typical library building, even a well-designed building less than ten years old, have changed dramatically and must be professionally reevaluated at the time of remodeling. The specifics of newer technologies, which develop and change rapidly, will not always be known. Buildings will need to be 'forgiving'. Flexible space design and flexible access to power and communication will be critical. Renovation plans will increasingly succeed or fail on their ability to accept and distribute sufficient power and telecommunications. The Library Department will want to involve the Department of Information Systems and Telecommunications (DIST) in the planning for the computing and telecommunications options for new libraries and in the remodeling of regional libraries, especially.

Some design specifics are agreed upon by the majority of library planners. The number of wired workstations will increase. Most reader stations and staff work stations will have either terminal or microcomputer components. Many of these workstations will require access to standalone or shared peripherals. Mid-floor requirements for power will be inevitable. The workstations for the online catalog and other indexing may be concentrated at sites where their less automated counterparts are now located. However, it will be desirable to distribute some workstations throughout the collection and the library will have increasing numbers of patrons with laptops who will expect convenient access to outlets. Planners recommend many approaches to wire management including: ample conduit runs of sufficient diameter to allow for future wire insertion; additional blank circuits or even panels for expansion; modular carpet squares combined with flat cabling, desk and workstation furniture that has built-in cable storage space, and clean power sources for computers that are not shared with other equipment.

Telecommunications in older buildings will also pose problems. The library will need to facilitate communications from outside the library confines. Dial access to the library's online catalog and other services will increase as patrons contact the library from their homes and offices. Potential LANS must be accommodated. Planners recommend that telecommunication cables must be enclosed in their own conduit and that fiber optic cable be preferred over metallic cable for its higher data capacity and is impervious to most sources of interference.

Other design considerations for the 'electronic library' are: the need to maintain stable temperature in a building where workstations will increase the heat load; the need to have different lighting levels in a building with both stacks and many VDT screens; the acoustical problems posed by printers and other peripherals; and the desirability of demountable walls avoiding load-bearing and full height walls where possible.

NEED FOR TRADITIONAL FORMATS

> Publishing media no longer represent the only ways that libraries can make information available to patrons. Some theoreticians posit a day in which published media will be less significant to libraries than electronic information. ...it will not be in the immediate future.
>
> A view of libraries as nothing more than purveyors of information is too limiting... A library offers access to dreams, ideas, and entertainment in the form of fiction, philosophy, music, and many creations beyond simple facts.... Those dreams, ideas and entertainment are available through published media. (Crawford,Current Tech, p.9)

Many forecasters agree with Walt Crawford that books will continue to be important in libraries. They are flexible, low cost 'technology'. Books are a good example of how new information mediums do not supercede the old, but build on them incrementally. The explosion of printed information is driving the development of systems to record and access it. The American book publishing output increased by 25% between 1977 and 1987, the last year for which final statistics are available. (PW 2/19/79 p.53 and PW 10/3/89 p. 37) It is estimated that the larger research libraries in the United States could double in size every four years in the next decade. Demographic trends are expected to support book industry profitability through the 1990's. It is estimated by the 1988 Gallup Report on Book Buying that the number of people who buy books in a given week will increase by 35% for non-fiction and 30% for fiction by the year 2010. Much of this activity is related to the coming of age of the baby boom generation. As this group ages the demand for children's books and other books associated with parental roles will decline and the demand for other non-fiction will increase. (Piirto)

WHERE WE ARE NOW

A SURVEY OF MCDPL'S CURRENT AND NEAR TERM ELECTRONIC INFORMATION SYSTEMS

The Library Department has already made a substantial acquisition of automated systems. Planned near-term enhancements of these systems will place more electronically stored information in the hands of end users; provide read only access to library databases at homes, schools and worksites; improve staff access to office automation and to electronic communications; and begin the linkage of library computing systems and office automation systems.

Immediately following on page 33-45 are **Figures 14-23**, which summarize the Library's current electronic information systems in terms of their hardware, functions, information content, locations, users, planned upgrades and interconnections. There is a chart for each major function:

- CARL Integrated Library System
- Wang VS Office Automation Network
- Public Access Microcomputing Projects
- Supercat - Cataloging System
- Online Search Operations
- CD-ROM Workstations
- Desktop Publishing
- Libris II - Acquisitions System
- Milnet - Interlibrary Loan Network
- Special Needs DRA System

Following the charts is **Figure 24** which shows how systems are or might be interconnected in the near future. **Figure 25** is a summary table covering inventory, upgrades under consideration and some examples of what things cost.

THE CARL INTEGRATED LIBRARY SYSTEM

The CARL Integrated Library System was installed in the Fall of 1988 to replace the Library's first automated circulation of 1979. This system is central to the Department's development of electronic services in the next three to five years. Its bibliographic database and circulation control components are more reliable, accurate, flexible and responsive that those of the old system. The new system adds a fully searchable online public access catalog to the bibliographic and circulation control components. Other public access information databases can be added to the system. The system provides links to the catalogs and databases of other CARL Systems Incorporated customers. These features were discussed previously in this paper.

The timetable has been advanced for public use of the public access catalog of the integrated library system. The provision of PAC services to library users is the first and most critical step in library's electronic modernization. In 1990 it will be piloted with the public at the new Fairland Branch Library (February), the reopened Little Falls Community Library (July) and the new Damascus Community Library building (August). In the FY91 budget the Department of Public Libraries requested $54,300 as the third priority above the MARC for terminals and peripherals for three regional libraries (See also **Figure 12**) This initiative was not funded, subsequent budget submissions will support the crucial goal of adding the Public Access Catalog (PAC) for direct public use at all libraries as quickly as possible. The Library hopes to take full advantage of the existing $1.8 million stake in our automated system extending its capacity to all library users.

PAC PLAN FY 91

DESCRIPTION	BELOW MARC	ABOVE MARC	CIP FUNDED
Central Site	$31,000		
3 Regionals (term. phone. comm.)		$47,920	
Regional cabling		$6,230	
GT PAC (term+cable+phone)			$19,940
DM PAC			$15,100
LF PAC			$8,400
AH PAC			$8,400
PAC Peripheral (GT & DM)	$15,000		
PAC Peripherals (AH & LF)	$9,000		
Total Cost 3 Regional and 2 new and 2 renovated.	$55,000	$54,150	$51,840

As of 11-Dec-89

Figure 12

Public availability of the PAC would increase user satisfaction and the utilization of the collection. The PAC increases both the efficiency and effectiveness of catalog searching. A library user must be able to identify and locate all current and relevant materials in the collection to satisfy completely his/her information needs. As more relevant materials are identified available collection will be more fully used.

At present someone seeking a particular title, or material on a particular subject, uses a catalog in microform. It lists the materials owned by the library on the date the microform is mastered (three times per year). It reflects branch locations only at the time the catalog records are processed, and is frequently several months behind. The fiche catalog offers no information on whether a book is on shelf or checked out. Indexing for records in this catalog is limited to the traditional alphabetical author, word-by-word title, and subject listings formally defined by the Library of Congress, and searching it has the same limitations. Mistakes in the wording of a title or the wrong choice of word for a subject frequently cause searches to end unsuccessfully. Some patrons require laborious staff intervention to determine whether the particular book or subject information is available. Older users find fiche difficult to to read.

By contrast the PAC offers a user friendly database of all materials and their location, current to the moment, searchable by key words. Index points in the PAC also provide greatly enhanced access. Date of publication, partial title or author, format, and both formal subject headings and keywords may be used as access points. Public availability of the PAC will promote self-help and improve the results of user searches. It will refocus front line staff on high quality assistance rather than routine "lookups".

The PAC is also a spine on which other databases which would be useful to a broad spectrum of patrons can be mounted. In January 1990 the Library added UNCOVER, indexing of over 7,500 periodicals (450,000 articles) to the public access catalog. We expect this database to be very popular. Automated periodical indexing which we now have only on CD-ROM is among the most heavily used tools in regional library reference rooms. The Department is now working on a community information database, which will reside on the PAC network. The local health information component of this database is expected to be available in early 1991. It will be available through dial-up access. (The public access catalog is being made available to dial-up users in 1990. For information dial 217-OPAC.) Plans are under consideration that might link office automation users in the Executive Office Building and at Administrative Headquarters to the PAC.

The decision to implement the PAC in FY91 and FY92 has impact on the development of other automation. It is probable that potential office automation networks and the networking of CD-ROM products will be deferred in years when the PAC has priority.

The Acquisitions Module of the Integrated Library System, already purchased, will be implemented in FY91. The Library's partially automated processes for ordering and receiving library materials would be upgraded. Better accounting data and other statistical reporting on materials' acquisition and vendor performance will be available. Current planning for this component includes linkage with the electronic systems of major library materials' wholesalers such as Baker & Taylor.

END USERS AND PUBLIC ACCESS CATALOGS

The introduction of the Montgomery County Public Access Catalog will be the Department's first major opportunity to study its clients' use of a large electronic information system. There is a great deal of very specific research on the interaction of the public with library systems. Much of it is on the use of catalogs and commercial databases. The Library may find some of these studies useful. Below is a summary of some material on the use of public access catalogs, offered as an indicator of the research and of future operations. With the introduction of the PAC, library staff will want to be aware of some general trends in the use of PAC's by end users. The power of online catalog access can be deceptive. As with most automated systems, PAC's have unique characteristics and can be used with more or less efficiency and effectiveness. Library staff will want to help patrons make the most of the system.

The online public access catalog, about to be introduced, has many of the recommended design features for effective PAC's. (Discussed in Crawford. Patron Access) It offers clear session start and stop cues, and restarts the display after a specified amount of time has elapsed. It does a good review of the step just taken and the next step to be taken. It uses consistent terminology, which is for the most part clear and without jargon. Its messages to the user are fairly neutral, and not too cute or too anthropomorphic. The majority of its main features can be used without much additional guidance beyond the screen information.

However, the library will reach only a small percentage of users with formal instruction about the PAC. The library will probably want to offer librarian assistance in signs at terminals or in the brief instructional factsheets for users, since this suggestion is not made on any of the PAC screens. Since no public access catalog can be perfect in all phases of its design, librarians and other staff will need to be aware of the strengths and weaknesses of the library's public access catalog both in coaching patrons in its use and in following up with patrons, who have already used the PAC. The PAC does not, for instance, offer easy access to alternate subject terms. Since in a national study 45% of online catalog users desired the ability to see words related to their search terms, this is a PAC weakness that librarians will want to take into consideration when working with patrons who have just used the PAC. (Larson)

Since online catalogs are more complex than card or book catalogs, patrons' reactions to them will be more varied. For instance, some searches by library users, new to the PAC, may be very imprecise. Many such searches will use only one subject term, for instance. These searches may result in a slower retrieval of too many citations, or in null searches. In the use of one large university catalog, the average number of citations retrieved per search was 77.5, but users only examined about 9 records per search. In the University of California MELVIL system, the mean number of citations retrieved per search was 200. Since the trick of bringing up the detailed record and status of the entries from the numbered records screen/s on CARL is not now well explained by the system, long lists may be especially frustrating. Will we see a large number of patrons who consult the shelves based on the initial listing without looking at specific branch holdings and availability? Will we see additional printing of the listing screen? Users also have a tendency to give up if there are too many citations to review. Some researchers say that information overload accounts for over 30% of failed 'subject' searches. (Larson. Managing Info. Overload and oral presentation at ASIS 11/1/89)

Patrons also have a tendency to stop searching too soon, often assuming incorrectly that the library does not have what they want. (Crawford and others). Librarians might keep in mind that as with the conventional reference interview, the PAC can provide results that match the explicit query of the user, but do not represent the best answer to the patron's real question. This kind of failure is not always apparent to the user.

Librarians might also note that as with manual information searching most patrons don't care about the details of how systems work, but are focused on getting the information they want. They are not, for instance, interested in whether parts of a system or systems are linked, or why a search takes a few seconds longer than expected.

WANG VS NETWORK

Office automation is an area in which the life cycle of technology is apparent. The present Wang office automation network is reaching capacity. The County is in the process of moving from WANG office automation to IBM office automation. This means that no substantial capital investment can be made in WANG equipment, and that increased office automation capacity cannot be achieved on a WANG foundation. The WANG system has moved from the development stage to a stage where it is being maintained. Fortunately, we have not reached the stage where it has costly operational problems. Small changes are being made to increase its efficiency of operation and some workstation hardware is still being added. Training is still be conducted on the more advanced features of WP+ software. The Department will need to do additional office automation planning with an eye toward the FY93 and FY94 budget years.

A study was completed last year by the Computer Information Center (DIST). It made recommendations for the future of office automation using systems we presently own. One recommendation was that the Library explore connecting WANG and the TANDEM as a way of extending electronic mail to all agencies. A later meeting with DIST which reviewed County network planning as well as Library plans placed interconnections of systems in a new focus. The Major Systems and Interconnections (**Figure 24**) gives an idea of how access can be extended through interconnection.

A recent CIC review of Business Office automation has given us an idea of the costs of installing a local area network which meets current County specifications. The $86,000 cost suggests the difficulty in funding separate development in office automation while the public access catalog project is in an expansion phase.

CD-ROM APPLICATIONS

CD-ROM applications are another area where local area networking is an option. A small network can provide multiple points of access to the same database and access to several databases at one terminal. LAN's would bring electronic services directly to the public as does the PAC. Other libraries have installed networks at less cost than the county option. But, as mentioned earlier, networking options and costs are volatile. This makes the deferral of public funding more palatable, and perhaps indicates a segment of development that should be in an alternative funding package.

The public is currently using CD-ROM reference services at the four regional reference centers. CD-ROM database products available at these sites include: DISCLOSURE, a database of SEC filing materials on over 10,000 publicly held corporations (Bethesda); MICROCAT, the union catalog of holdings for over 90 Maryland libraries (Bethesda, Rockville); NEW GROLIER ELECTRONIC ENCYCLOPEDIA (Gaithersburg); McGRAW-HILL ENCYCLOPEDIA OF SCIENCE AND TECHNOLOGY (Gaithersburg); MAGAZINE INDEX PLUS, an index of articles in over 500 popular magazines (Gaithersburg, Rockville 5/90, Wheaton); NATIONAL NEWSPAPER INDEX; an index of five important national newspapers from 1979 (Wheaton), HEALTH INDEX, and index to health and medical journals (Wheaton); PDQ, a file on cancer treatment, specialists and treatment programs (Wheaton); and PDR, a searchable version of the print directory of medications

(Wheaton). While some of these tools are in more constant use than others, all have been received enthusiastically by staff and by patrons. A more detailed study of CD-ROM use by clients of Montgomery County libraries will be available in spring 1990.

Over the next two years the library will be adding new CD-ROM products. Additional standalone workstations will be added. These workstations should have steady use. Local area networking may be under consideration within the life of these workstations. Such a network could be a component in a fee supported business research service proposal. Some CD-ROM products, such as periodical indexing on disc, may be phased out as comparable information is added to the CARL Integrated Library System. These possible futures will be taken into consideration when judging the best cost/benefit trade-off of the power and capacity for this equipment.

TERMINALS AND WORKSTATIONS

The inventory of worksite equipment (**Figure 25**) while incomplete suggests that we are approaching 300 electronic worksites. About half of these are for the Integrated Library System. About 32 or 12% have direct public use. About eight microcomputer workstations are being upgraded. About 220 link terminals would be added in PAC implementation. Electronic worksites would approach 500 and the percentage of direct public use worksites would increase to about 51%.

The Library has multiple levels of computing hardware and a lot of it. It will unquestionably be acquiring more. The question of how much power and functionality should be added at new or upgraded electronic workstations has come up in discussions with DIST and others. It is a question with seemingly endless ramifications. There is always something faster, more powerful, more operationally elegant and, initially, more expensive out there. (80286, 80386, 80486 and counting.) **Figure 26** shows just one trend in the basic requirements for microcomputers. Technical staff sometimes favors new and more powerful hardware which line staff is not prepared to utilize and cannot afford. It is difficult to predict who will want to use what applications where in five years. Nevertheless, the question must be entertained. Perhaps some kind of checklist for the review of workstation acquisitions could be worked out, or adapted from existing forms, in cooperation with DIST. It would help the staff arrive at a better judgement of the cost/benefit of various equipment options and include some of the following review elements:

- projected use of the equipment?
    - primary applications or functions needed at the site?
    - percentage of workstation time to be devoted each functions?
    - network connections; hosts to be accessed?

- who are the main users?
    - is any change in the users anticipated in the near term

- requirements of primary software and other software to be used locally (operating system needed, computing power)

- requirements of the networks and hosts

- o peripherals required (modems, printers, CD-ROM drives)
- o how long is the hardware likely to be used as described above?
  what related applications or functions are consistent with the primary use? when would these be used, how and by whom?
  what additional applications or functions might be useful at this location in the next 3-5 years?
- o cost of various options
  if acquisition is more than six-twelve months away, what are the projected cost trends for various kinds of equipment?

The review package might also include information on the machines available from contracted vendors and recommended by the CIC in the current year and what the capabilities of these models and their cost are. Better staff access to hardware options and cost information is needed if reasonable cost/benefit decisions are to be made. Long term records of automation development and costs are also needed.

The Department will need to review the staging of systems' upgrades, the years in which planning for new or replacement systems will be needed, and the years in which the operating budget will be impacted or alternate fundraising will be involved. **Figure 13** is sample table which covers some of the current commitments in this area. More work needs to be done in this area.

STAGING OF SOME SYSTEMS' UPGRADES AND PLANNING FY90-FY93

- - preliminary table - -

SYSTEM	ACTION	FY90	FY91	FY92	FY93
CARL/PAC	Dial-up	x			
	PAC Pilot-FA	x			
	PAC branches		x	x	x
	Add UNCOVER	x	x		
	Pilot I & R db		x		
	Expand I & R db			x	x
	Acquisition mod.		x		
WANG	Dial-up	x			
	Regional wkst. upgrades	x			
	Interconnection CARL		x		
	New OA planning			x	
	OA budget impact				x

Figure 13

SYSTEM

CARL

Integrated library system Tandem equipment was installed in March 1988. Circulation system and PAC for staff were installed in the branches in Fall 1988.

UNCOVER was made available in January 1990.

HARDWARE

Core Equipment

Tandem NonStop TXP

4 CPU's 8MB each

3.33 gigabytes of disk storage capacity (mirrored)

Terminals/Workstations

174 Link terminals

75 printers

100 lightpen scanners

52 Paradyne multiplexers (2 kinds)

FUNCTION/S

Circulation system

Online public access catalog

Periodical indexing

Library News

INFORMATION STORED AND/OR ACCESSED

Bibliographic records of materials in the collection. In modified MARC format.

Location and status of all titles and items in the collection.

Patron records and status files.

Management reports on circulation and use of specific parts of the collection, etc. are available. Reports written in TAL (Tandem Application Language)

UNCOVER Title, index and table of contents information for over 3,000 periodicals received by CARL member libraries.

Access to holdings of 35 other CARL libraries and customers

The Library has purchased the community information module software and will be piloting its use.

Library News allows timely messages on library programs and services and 'emergency' messages to be read on PAC terminals

WHERE LOCATED

All agencies and adminstrative headquarters.

Mobile Services is piloting the use of handheld units from which data would be transferred via floppy diskette to system

WHO USES

Public and Technical Services staff.

GENERAL PUBLIC

beginning in Fairland in February 1990.

PLANNED UPGRADES

Fairland PAC 2/90
Dial-up access by end FY90
PAC for end users FY91, FY92
(see text)

Switch from of some asych. multiplexers to faster, cheaper synchronous packet switching devices which will allow more terminals per Tandem port.

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

A one line link to CARL in Colorado is currently being provided through CARL's Expand system. This allows access to UNCOVER and to CARL member library holdings. CARL system has just been connected to the County mainframe.

Linking the TANDEM equipment and the WANG VS so that E-MAIL and the PAC would be available at all terminals of either system has been proposed, as have possible links to the County EOB token ring backbone and/or the cable G-LOOP. This linkage would allow County staff, including key planners to use the PAC.

Internet is a large national network to which other CARL libraries are linked, and in which MCDPL might want to be included.

Figure 14

BEST COPY AVAILABLE

SYSTEM

WANG

System was introduced in 1986 and is nearing capacity.

HARDWARE
Core Equipment

WANG VS 65

1 Laser Printer
2 High Speed Dot Matrix Printers

SNA equipment allows connection with County mainframe

EDAC equipment allows dial-up connections

Terminals/Workstations

20 4230A terminals
6 Wang A PC's
3 Wang Classic PC's (regionals)
3 PC 280's (1 at SNL)
2 PC 240's
2 Wang laptops (1 connected)

NOTE: 200 series Wangs are IBM AT compatible
Wang APC's have IBM emulation boards, not all have related software.

All pc's have printers. Remote equipment, TR, 1 laptop & 1 PC 240 have modems

SEE ALSO Desktop Publishing and Online Searching

FUNCTION/S

This is an office automation system.

It is not currently being used to access knowledge based information products.

INFORMATION STORED AND/OR ACCESSED

Applications Software on the Network

WP+ - word processing

WANG OFFICE - E-MAIL
calendaring

SPEED II - database manager (third party)

MHUTIL & VSCOM -communications

SNA 3274 Emulation
SNA 3777 Emulation

Applications Software on PC Workstations

WP - word processing
MULTIPLAN - spreadsheet
Database 1.1 - DBMS???
Business Graphics
WLCO (Wang Local Communciations Option)

LOTUS 1-2-3 - spreadsheet
DBase IV - database manager (on some machines Wang 200's & A/PC's with emulation boards and related software)
WLCO (Wang Local Office Connection)

WHERE LOCATED

4 regional libraries
Telephone Reference
Special Needs Library
Administrative Offices.

WHO USES

STAFF

including:
- Director's Office
- Business Office
- Public Services Offices
- Coordinator's Offices
- Technical Services
- Supporting Services
- Regional Administrators and Regional Library Staff

PLANNED UPGRADES

Switching three regionals from direct connection to dial-up connection.

Adding four dial-up lines that will allow any branch with the appropriate microcomputing equipment to dial-up.

Upgrading regional pc's

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

Connection to the County's IBM mainframe is possible from all terminals and pc's on network. and connection is being used by the Business Office

Dial-up from appropriate equipment

WANG network connections with the TANDEM equipment on which the CARL system is run and with the token ring backbone of the EOB are being explored. The Wang-Tandem connection may allow all branch E-Mail and Wang users to access the PAC on their terminals. The EOB would allow users on networks in the EOB to access the library catalog.

Figure 15

SYSTEM

Public Access Micros

Potomac had the first public access microcompter project in Fall 1986

HARDWARE
Core Equipment

na

Terminals/Workstations

6 Kaypro 16 2E Portables (AH)
3 Apple II E's (DET)
1 Genie XT (GT)
2 Apple II E's (LB)
1 Honeywell EP (O)
1 IBM PC (O)
1 IBM PC XT (O)
2 Apple MacIntosh's (P)
1 Kaypro PC (P)
1 IBM XT (SNL)
1 1 Apple II+ (SNL)
1 Apple II E (SNL)
1 Compaq 286e (SNL)
1 Apple II E (W)

FUNCTION/S

Training in standard applications for public.

Demonstration of learning software for children.

Computer assisted literacy.

Handicapped access to applications software & Talking Books database

Office automation/library files /Desktop publishing

Word processing/computer literacy training for inmates.

INFORMATION STORED AND/OR ACCESSED

Applications Software Owned

Library has spent approximately $5,000 per year on software for these projects since 1986. Other software has been grant funded or donated.

Applications such as WORDPERFECT, DBASE, LOTUS, PRINTSHOP etc. are owned.

Children's packages such as "Where in the World is Carmen Santiago?" are owned.

NOTE: A 'complete' Fall 1989 inventory of software owned or on order in connection with these microcomputers is available from the Electronic Services Librarian, Information Services 217-3834

WHERE LOCATED

Branches as shown top right.

Many of these micros are located in workrooms or small rooms of the floor where they can be used by the public.

4 Branches are to be inventoried.

WHO USES

GENERAL PUBLIC

Staff in Branches

PLANNED UPGRADES

Unknown.

System has recently formulated a policy for the review of future gifts of microcomputers and related peripherals.

Package on maintenence issues being developed.

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

Microcomputers with appropriate communications software and modems will be able to dial-up both the WANG VS system and the PAC when dial-up is implemented for systems in 1990.

Figure 16

SYSTEM

SuperCat

A Gaylord system.
Acquired to replace
Mini-Marc in 1988.

HARDWARE
Core Equipment

A group of standalone terminal.

One terminal is equipped to make direct transfer of cataloging records to the CARL Intergrated Library System

Terminals/Workstations

Leased Equipment ??

2 Samsung IBM XT clones
2 Samsung IBM AT clones
Each with two floppy drives

Each workstation has an Okidata printer and a two slot CD-ROM 292 drive.

All workstations are standalone.

FUNCTION/S

Used primarily for cataloging.

Occasionally used for bibliographic research.

INFORMATION STORED AND/OR ACCESSED

Products and Functions

Catalog record development

Edit sheets for precataloging and bibliographic researchers

Transfer of cataloging records to CARL

Production of spine labels

Catalog cards as needed

Activity reports

Knowledge Database

Library of Congress MARC Records on two CD's updated twice monthly

foreign language database updated quarterly

WHERE LOCATED

Technical Services
(Administrative
Headquarters)

WHO USES

Supervisor of Cataloging and Preparation

4 Cataloging Staff

Processing staff preparing labels for added copies (1)

Interlibrary Loan and selection staff doing bibliographic research (1)

PLANNED UPGRADES

Upgrade from XT to AT pc's to increase drive operation have been installed in 2 of the workstations and 2 remaining will be upgraded

An additional workstation in the processing section has been discussed.

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

There is a direct connection to the CARL Integrated Library System.

To future Acquisitions automation ??????

Figure 17

SYSTEM

Online Searching

Library began online searching on behalf of the public in 1979.

HARDWARE
Core Equipment

na

Terminals/Workstations

- 1 WANG classic pc (W) with IBM emulation board and software
- 1 WANG A PC (TR) (part of VS equipment can use VS printers) with modem
- 4 TRS Model 12, printers and modems. (B, G, RV, TR)
- 1 __________________ (SNL) (also a 'public access micro')
- 1 Silent 700 TI portable terminal

NOTE: Three of the Model 12's are castoffs from the SCICON back-up system.

FUNCTION/S

Searching of commercial databases in response to patron information inquiries. Over 3000 searches were done in FY89

Office automation on the WANG machines.

Portable was used for demonstrations of online searching.

INFORMATION STORED AND/OR ACCESSED

All online search workstations are using communciations software , such as CROSSTALK. Software is appropriate to the operating system of the machine. Model 12 communications software is no longer available or supported.

WANG Classic has basic WP. TR WANG has the same applications as all PC's directly connected to the VS network

Databases and database groups accessed include:

DIALOG - over 300 databases
NEXIS - newspaper, journal and industry dbs.
BRS - scientific & gen'l dbs
MEDLARS - medicine
ALANET - association E-MAIL gateway to DowJones, wire service dbs
SPECIALNET - special needs EBB & database
LOGIN - E-MAIL, EBB, and text database for local government

FY91 online budget is $52,000

WHERE LOCATED

Regional libraries and Telephone Reference

Most online terminals are located off the floor but near the reference area in a reference office or similar room.

WHO USES

Reference staff that have appropriate training and experience in online searching. MCDPL has about 25 trained searchers.

PLANNED UPGRADES

WANG Classic workstations are pending in FY90 to replace TRS Model 12's Model 12 in TR has been replaced and is being phased out.

New communications software and high speed modems are being phased in.

Add modem to Coord. Office IBM XT workstation.

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

These microcomputers which have communications software and modems will be able to dial-up both the WANG VS system and the PAC when dial-up is implemented for systems in 1990.

Figure 18

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SYSTEM

CD-ROM

First optically stored database was acquired in FY87 (MAGAZINE INDEX PLUS, or InfoTrac) and MICROCAT on CD-ROM FY88 Both products where offered as leased equipment packages.

First CD-ROM database subscription and associated equipment was DISCLOSURE. (FY89)

HARDWARE
Core Equipment

none

Terminals/Workstations

Owned

3 Televideo TS-3000 IBM XT compatibles with external CD-ROM drives
1 EBSCO XT-10 IBM compatible with internal CD-ROM drive.
All workstations have printers

Leased

2 InfoTrac II workstations equipped with internal CD-ROM drive and with printers.
1 Health Index workstation
1 National Newspaper Index wkst.
2 IBM compatible PC's 640 RAM with two internal CD-ROM drives w/ owned Okidata 182 printers.
(This equipment will be MCDPL's in FY91)

FUNCTION/S

Patron access to large databases of electronically stored and searched information - full text and bibliographic

INFORMATION STORED AND/OR ACCESSED

CD-ROM Titles In Use

MAGAZINE INDEX PLUS (G, W)
HEALTH INDEX (W-HIC)
NATIONAL NEWSPAPER INDEX (W)
MICROCAT and OLDCAT (B, G)

DISCLOSURE (B)
GROLIER ELECTRONIC ENCYCLOPEDIA (G)
MCGRAW HILL ENC. OF SCI/TECH (G)
PDR (Physicians Desk Reference) (W)
PDQ (Cancer Information File) (W)
BOOKS IN PRINT PLUS (Coord. Office)
ULRICH'S PLUS (Coord. Office)

Description of Contents

Indexing for over 350 magazines
Indexing for health journals
Holdings 96 Md. libraries

Full text info. 10K companies
Full text general encyclopedia.
Full text technical encyclopedia
Full text drug reference book
Clinical and treatment info.
BIP, SBIP, FC Bks, PW rev, etc.
Internat'l periodical reference

WHERE LOCATED

Regional Libraries Workstations are on the floor of the library in the reference area or in the Health Information Center.

Coordinator's Office

WHO USES

GENERAL PUBLIC

and staff in regionals

Staff doing bibliographic research for collection dev.

PLANNED UPGRADES

An additional workstation will be added at RV in FY90. CD-ROM products are available or will be ordered.
An additional workstation for marketing/demographic services is pending for B FY91

ABI/INFORM/BUSINESS PERIODICALS ON FILE and DISCAMERICA
FY92 CD-ROM for 1990 Census RV

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

CD-ROM products can be located on local area networks. This requires additional equipment and that the workstations be at one site. Subscription prices for networked products are high. We are not considering networking prior to the implementation of the PAC at this time.

MCDPL may want to consider making the electronic encyclopedia available using the CARL Integrated Library System rather than in the CD-ROM format. It is available at CARL libraries in Colorado.

Figure 19

SYSTEM

Desk-top Publishing

Acquired in FY89

Pilot projects FY89 and self-learning project FY90

HARDWARE
Core Equipment

na

Terminals/Workstations

1 PC280

Wang PC Scan Plus Scanner (not OCR)

FUNCTION/S

Desktop Publishing

Possibly some data entry by scan, but scanner is primarily for images not text

INFORMATION STORED AND/OR ACCESSED

Applications Software

Pagemaker
WP

PC Paintbrush Plus

Transfer of text from the VS is done by downloading to a floppy disk.

WHERE LOCATED

Wang Printer Room
Administrative
Headquarters

WHO USES

3 Central Staff members are in the self-learning group, which meets once a week for two months and also completes tutorials.

Group is coached by Josephine Tao, Technology Management

PLANNED UPGRADES

Installation of modem to dial-up VS.

Continue training staff to use existing equipment and software.

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

Shares laser printer with Wang VS system.
Dial-up to VS.

Figure 20

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SYSTEM

LIBRIS II

We began using the present LIBRIS II online ordering system in 1984.

Most Baker & Taylor customers are no longer using this configuration of LIBRIS.

HARDWARE

Core Equipment

Host system in in Northern Virginia. It is contacted by dial-up using a local call.

Terminals/Workstations

- 2 Honeywell terminals
- 1 TI Omni 800 dot matrix printer
- 1 Honeywell dot matrix printer
- 2 Dataphone 300/1200 modems

This equipment belongs to Baker & Taylor.

FUNCTION/S

Order placement.
  Orders sent to Baker & Taylor are sent electronically to B & T in Somerville, N. J.
  Orders to other vendors are printed and sent by mail.

Order form production.

Book and audio/visual materials fund accounting.

Bibliographic research.

INFORMATION STORED AND/OR ACCESSED

LIBRIS maintains are large database of books and their in print status.

The online LIBRIS database does not show warehouse status at Baker & Taylor.

It does show more current POS, OP and other non-availablity than BIP.

LIBRIS allows the creation of purchase orders.
  Titles selected from the database are automatically entered.
  Purchase orders may be inquired to check on delivery status.

Purchase order forms and multi-part order forms are outputs of the system.

Fund status reports can be run for agencies by account or for accounts by agencies. These accounting reports are used to produce fund status reports for the Coordinator's Office, rekeyed into Multiplan.

WHERE LOCATED

Acquisitions Office.

WHO USES

Acquisitions staff (2)

Bibliographic researchers in the Coordinators Office (2)

PLANNED UPGRADES

New connections to Baker & Taylor inventory and bibliographic databases and to electronic order and invoice records will be needed when the CARL Acquisitions Module is implemented in FY91.

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

Dial-up to Baker and Taylor

Figure 21

SYSTEM

MILNET

MILNET, the Maryland State Library Interlibrary Loan Network was introduced in Spring 1985

HARDWARE
Core Equipment

Host for the system is located at Autographics, Inc. in California.

Database is maintained by the State Library Resource Center at the Enoch Pratt Free Library in Baltimore.

Microcomputer and peripherals and fiche products are sold by the Baltimore County Public Library on behalf of the State.

Terminals/Workstations

One Sperry PC with DOS 2.11
DataSouth DS-180 dot matrix printer
Codex CS48FP modem

MDCPL has two CD-ROM workstations in B and R with the MICROCAT and OLDCAT holdings they are described elsewhere.

FUNCTION/S

Interlibrary Loan.

E-Mail for libraries on the network including the State Library Resource Center.

INFORMATION STORED AND/OR ACCESSED

Placement of interlibrary loan requests and reply to requests to MCDPL.

Production of forms for interlibrary loan requests.

Activity reports for SLRC and member libraries.

Bibliograhic database that includes the holdings of 96 Maryland academic, school and public libraries.

A periodical holdings database is also available.

Database is continuously updated and holdings since 1967 are issued on CD-ROM and microfiche once a year.

WHERE LOCATED

Interlibrary Loan Office

WHO USES

Interlibrary Loan Supervisor and Staff

Bibliographic research staff from the Coordinators Offices

PLANNED UPGRADES

State is looking at improvements in the CD-ROM product. and at the future of the fiche product.

The original online network of the biggest lenders is being expanded.

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

SLRC moves requests from MILNET to OCLC Interlibrary Network when a Maryland Library cannot fill a request.

The MILNET database is a potential constituent of and foundation for an expanded state network.

Figure 22

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SYSTEM

SNL/DRA

Installed in 1989.

Remote site on state network, which was an LSCA project.

System is administered by State Library for the Blind and Physically Handicapped.

HARDWARE

Core Equipment

Host is at the State Library for the Blind and Physically Handicapped.

DEC equipment is used.

Terminals/Workstations

- 3 VT320 terminals
- 2 Caere 512 scanners
- 1 NEC Spinwriter 8800 printer
- 1 Digital LA75 dot matrix printer
- 1 Gandalf LDS410 Modem
- 1 DCA Statistical Multiplexer 8-port

FUNCTION/S

Helps staff to locate, select and circulate talking books, periodicals and equipment to visually impaired, physically handicapped and learning disabled patrons.

INFORMATION STORED AND/OR ACCESSED

Records and reading profiles for handicapped patrons.

Collection database of Library for the Blind and Physically Handicapped.

Database subset for Special Needs Library Materials

Shows local and state holdings and their availability

WHERE LOCATED

Special Needs Library

WHO USES

Staff at the Special Needs Library

PLANNED UPGRADES

Upgrades would be planned at the State level.

INTERCONNECTIONS AND POSSIBLE INTERCONNECTIONS

Figure 23

MAJOR SYSTEMS AND INTERCONNECTIONS

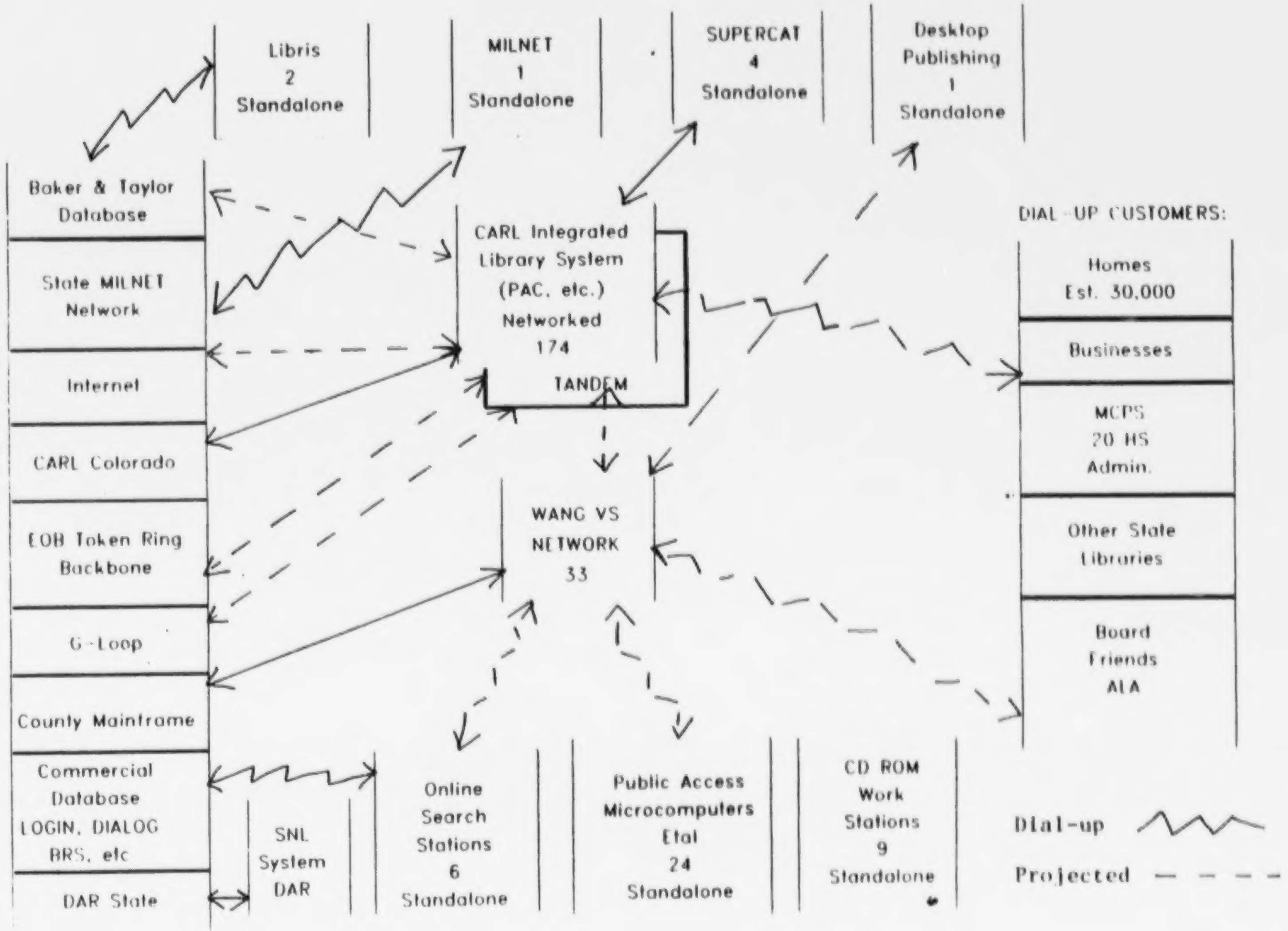
Libris
2
Standalone
MILNET
1
Standalone
SUPERCAT
4
Standalone
Desktop
Publishing
1
Standalone
Baker & Taylor
Database
State MILNET
Network
Internet
CARL Colorado
EOB Token Ring
Backbone
G-Loop
County Mainframe
Commercial
Database
LOGIN, DIALOG
BRS, etc
DAR State
SNL
System
DAR
CARL Integrated
Library System
(PAC, etc.)
Networked
174
TANDEM
WANG VS
NETWORK
33
DIAL-UP CUSTOMERS:
Homes
Est. 30,000
Businesses
MCPS
20 HS
Admin.
Other State
Libraries
Board
Friends
ALA
Online
Search
Stations
6
Standalone
Public Access
Microcomputers
Etal
24
Standalone
CD ROM
Work
Stations
9
Standalone
Dial-up
Projected

Figure [illegible]

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SUMMARY INFORMATION

Workstation Equipment
Estimated Inventory

Owned Equipment

Terminals	198
Portable terminal	1
Micros	53
Laptops	2
Printers	95
Modems	16
CD-drives	4
Scanners	3

Note: Inventory of public access micro equipment is incomplete, & printers at these sites are not included above.

Leased Equipment

Micros	12
Printers	10
Modems	2
CD-drives	10

Most leased equipment is associated with SUPERCAT or with Information Access Corporation CD-ROM indexing products.

Kinds of Upgrades
Under Consideration

Expansion of System Capacity and Role

Extension of PAC to end users requiring more terminals multiplexer additions and changes, and addition of a processor

Interconnections

Dial-up to the PAC
Dial-up to the Wang VS

Wang to Tandem/PAC
Tandem/PAC to EOB network
Tandem/PAC to G-Loop

Upgrades in Capacity of Micros

2 XT to AT's - SuperCat
3 TRS Model 12's to Wang Classics - online search terminals
Wang Classics to PC200's - regional library OA

New Database Access

UNCOVER
Community Information
Additional CD-ROM databases

What Things Cost
Some Hardware Price Ranges

End User PAC

FY91 Below the MARC	$55,000
FY91 Above the MARC	$54,150
FY91 CIP Funded	$51,840
FY92 Budget	$295,670
(Includes processor -	
new	$253,000
reconditioned	$153,000)

Seven Workstation LAN

A County Option $86,000
IBM Model 80 PS/2 File Server
7 PC's with 60 MB hard disk and 6 MB memory.

Another Option $28,616
Comtex 386 File Server, 25 MHZ, 4 MB RAM 1.2 MB Hard Drive
7 Contex 286 Workstations w/12 MHZ. 4 MB RAM 80 MB Hard Drive.

Workstations

IBM PC - AT Compatible	$2145-$3000
PC-386 High Performance Compatible	$3219-$4696

Both include:
1 1.2 MB floppy, 1MB RAM
Color Monitor - CGA & adaptor
1 internal CD-ROM drive and dot matrix printer

Apple Scholarly (p.) $17,500
Includes: MacIntosh 4/40 4MB, Apple CD Player, Apple scanner, Laser Writer Printer, fax modem, 1200 modem, Appletalk network

Microcomputers

IBM PC AT Compatible $1213-$2149
Includes: 640 K, 1.2MB floppy drive, DOS 3.3, Color graphics adaptor & CGA color monitor. Low end estimate includes has 1 MB RAM.

IBM-PC 386 Compatible $2181-$3799
Includes: 80386 processor, 2o Mhz, 30 MB hard drive with high performance controller, DOS 3.3 Color graphics adaptor & CGA color monitor

Printers

Dot Matrix	$179-$290
Letter Quality	$249-$490
Ink Jet	$745-$1095
HP Laser Jet IIP	$959-$1495

Other Peripherals

CD-ROM Drive - Internal	$499-$499
Hayes Compatible Modem - 2400 baud	$109-$299

1/90

Figure 25

Operating System Trends

	1988	1993
Personal Computers	1. MS-DOS 2. Macintosh DOS 3. OS/2 4. UNIX	1. OS/2 2. MS-DOS 3. Macintosh DOS 4. UNIX
Multiuser Micro-computers	1. Xenix 2. UNIX 3. Proprietary OS	1. UNIX 2. Proprietary OS
Technical Workstations	1. UNIX 2. Proprietary OS	1. UNIX 2. Proprietary OS
Personal Super-computers	1. UNIX	1. UNIX
Minicomputers	1. DEC VAX VMS 2. Proprietary 3. UNIX	1. DEC VAX VMS 2. UNIX 3. Proprietary
Mainframes	1. IBM MVS 2. Proprietary 3. UNIX	1. IBM MVS 2. UNIX 3. Proprietary
Minisuper-computers	1. Proprietary 2. UNIX	1. UNIX 2. Proprietary
Supercomputers	1. Proprietary 2. UNIX	1. UNIX 2. Proprietary

Figure 26

FUNDING

This report assumes that there will be some level of ongoing investment in library automation. This investment will probably have the following characteristics:

- There will be a regular cycle of 'capital investment' for technology in libraries, no system will be bought once.
- There will be incremental costs for training, for technical upgrades and for technical staff.
- Between cycles operating costs for maintenance will increase.
- Innovation probably cannot be funded through greater efficiency and productivity. Increased productivity will create new costs and new service complexities.
- Failure to successfully implement technology will include not only the cost of using and maintaining obsolete technology but the opportunity cost of unrealized value-added gains.
- The benefits of end user information technology will require careful explanation and will accrue largely to the citizen user not to the library provider.

In the light of this cycle of investment, this section discusses three questions:

1. What is the public funding outlook?
2. Is there a case for public funding of electronic information services?
3. What are the possibilities for alternate funding?

PUBLIC FUNDING OUTLOOK

Kenneth Dowlin, an early advocate and builder of the electronic library, has estimated that "...to run an electronic library it will cost us twice as much as we are spending now". (URBAN ELECTRONIC LIBRARY..., p.84) This daunting statement needs to be set in context. Library funding is usually "...less than 2% of the costs of state and local governments...this has been their position among government expenses for their entire history, so an almost invisible reallocation, just 1 percent more ... would increase library support by at least 50%..." (Trezza EFFECTIVE ACCESS..., Berry p.94). In Montgomery County public library funding has varied between 2.27% (1960) and 1.27% (1980) of the County budget, usually hovering around 1.5%. Is the Library likely to get the greater percentage of the County budget needed to fund the program of electronic services which is fundamental to its survival as a modern institution? From one recent review of the County's immediate budget needs a grim answer can be inferred. "All of the other programs provided by the County including libraries and recreation, while able to offer additional needed services, have either improved or stayed even over the last decade and are comparatively least in need of program improvements." (TASK FORCE)

FEDERAL GOVERNMENT

The federal budget picture is all too well known. There is a healthy library lobby, and LSCA funds will probably remain fairly constant. They will be available as starter funds for new projects. The forthcoming second White House Conference on Library and Information Services may focus attention on the need to electronically modernize public libraries, but no one seems to be optimistic about substantial federal funding increases.

Federal information policy of the last decade has leaned toward the privatization of information. Government database development is often in the hands of private sector vendors who will 'add value' and distribute them to the public for a fee. Some of the main agencies that publish government information, the U.S. Government Printing Office through the federal depository program and the Bureau of the Census, will be piloting free electronic dissemination of information.

STATE FUNDING

For the first time in several years the State is without a large budget surplus. There are many demands for new programs, among them a major prison construction program. The funding focus of state legislators from Montgomery County and County officials is likely to be on school and road construction. State departments expect tight budgets and less federal program support.

MONTGOMERY COUNTY IN THE 1990's

The Council with the cooperation of the Executive staff has sponsored a very comprehensive study of future budget needs by the Task Force To Examine Future Budget Needs. The report is an authoritative and probably influential review on public funding for the coming years. It is summarized here as key background for staff thinking about the future.

The report assumed:

- an annual rate of inflation of 5.5% per year for the next 5-6 years
- population and school enrollment would be as predicted by Park & Planning and by MCPS.

  Population: 760,000 (+6.3%) by 1995 & 785,000 (+9.8%) by 2000
  Enrollment: 128,211 (+25%) by 1995

- there would be no major recessions in the next few years.

The Task Force looks for the burdens of funding the operating budget of the government to be shared by not only home and business owners through property taxes, but by its clients through user fees, by County staff through higher efficiency and productivity and by the taxes and fees directed at the growing number of commuters (180,000 annually). It is recommended that increased earning be used in departments to fund priority, underfunded services rather than returning them to a central pool, and that departmental savings be reassigned in the departmental budget.

The Task Force recommends a conscious effort to hold down capital expenditures and/or the County workforce, emphasizing the critical need for roads and schools. It points out that the Council must deal aggressively with the County's problems, setting a limit on legislative spending and integrating its decisions about operating and capital programs and labor negotiations. The Task Force did not make specific recommendations beyond FY93 because major state and federal changes expected in FY92 precluded it. The Task Force did not discuss the impact of defense spending cuts, but points out that 50% of the federal contracts in Montgomery County are defense related projects. It cautions that federal spending in the Washington-Baltimore area is down by a $1 billion this year. Other forecasters have predicted that Washington's technology-based economy should continue its potentially explosive growth through the end of the millennium. ....Fear of the impact of defense cuts is overblown..." (Smith)

The first of the expenditure scenarios for the County would hold per capita property tax collections at the FY90 level adjusting for inflation. Some options would seek other revenues to reduce the property tax level. Other scenarios would allow revenue to increase by 10% a year and a final possibility, not recommended by the Task Force, is maintaining the tax rates at the current level resulting a very substantial rise in revenue. However, these other scenarios seem unlikely to be adopted. The County has just notified 62,000 homeowners that their assessed value has increased between 35% and 150%. These increases have fueled great concern in the community of which the Fairness in Taxation amendment is evidence. Both the Council and the Executive are acutely aware of the need to keep property taxes at their present level.

Funding increases for employee pay and benefits (4.55%), inflation (1.65%), increased population and enrollment (1.8%) and program improvements and catch-up (1.6%) are proposed. The County would raise user fees over four years to arrive at a level of a $10 million per year increase. User fee opportunities would be sought throughout the government and might prove "painful". The aim is to keep the property tax down and accept payment from the beneficiaries of particular services. The three areas which the Task Force gave priorities for program increases in the coming budget year were: human services for the homeless, food assistance, assistance for the working poor and the frail elderly, minorities, AIDS programs and school health ($4.5 million); criminal justice ($4.5 million); and emergency medical services ($1 million). They did not target the agencies that would receive the human services funding specifically. Housing and transportation would have the next priority. The schools are not given priority for increases in funding at this time. Library programs are specifically mentioned as "...comparatively least in need of program improvements." (p.24) Later it is noted that library expenditures have increased 163% in the period 1978-1990, while the combined effect of inflation and general population growth supports only 153% increase. It is not clear if the 'inflation' referred relates to overall rates of inflation or to inflation in publishing which has exceeded inflation in other parts of the marketplace throughout the 80's.

The Task Force concluded that this year's operating budget could be funded with current tax sources, but that the capital budget situation was very serious. Here the County needs an additional $176 million dollars if it is not to delay or cancel critical projects in the six year CIP. There are many FY90 CIP projects which the Task Force does not regard as optional, including $2 million in library renovations.

The county need for infrastructure is critical at a time when federal funding for roads and transportation is expected to decline and when increased State funding is needed but uncertain. Unless something is done, the delay of new roads by the State and County will insure a growth moratorium for the foreseeable future, i.e. no new subdivisions would be approved for development. In addition traffic congestion is costing business and citizens time on the highways to the detriment of economic growth. The Task Force is proposing the creation of a Transportation Trust Fund which would be funded through a piggyback gasoline and/or auto registration tax, a parking tax on non-residential parking spaces and toll roads.

The County Executive emphasized schools, deferring road projects, in his FY91 CIP budget presentation. The Department was aware of both the interest in fee revenue and the intense pressures on the capital improvements program budget in the 1989-90 budget season.

A CASE FOR PUBLIC FUNDING

"...traffic congestion is costing business and citizens time on the highways to the detriment of economic growth..." (Hussman, Council Briefing 12/12) Many would not quarrel with the County's much discussed need to build roads. However, it might be argued that other services and infrastructures will increase in importance in the next twenty years. The County Executive has already recognized the demand for education services. Forecasters are unanimous in the need for better educational services, especially for adults and minorities, in the 1990's. Communities will also need to modernize library and information services to keep pace with change and support economic development.

Over the last thirty years the County has made a substantial investment in libraries. It has supported the idea that "...the application of information resources to the process of decision-making to fulfill civic responsibilities is a vital necessity." (ALA PRESIDENTIAL..., Major R. Owens, p.5) Information is a key resource if we are "...to adapt, adjust and renew ourselves and our economic activity." (Commission on the Future, p.45) Without staged growth in the area of electronic information services, this investment in the information function of libraries will be lost over the next twenty years.

Information networks and telecommunications capabilities are fundamental to education, to libraries and to business development. "A well-developed telecommunications and information infra-structure could provide crucial, pervasive, day-in, day-out benefits in the personal and working lives of all citizens:..." (National Telecommunications..., p. 14) Over the next decade we will see that electronically stored and disseminated information is critical to the information needs of individual citizens. It is already possible in some disciplines to search for and print a bibliography and to retrieve and print the full text of the relevant articles listed without getting up from your seat. Eventually it will be clear that it is just as detrimental to the development, economic or otherwise, of the information seeker to waste his time in a library locating documents using cumbersome and incomplete, multi-volume printed indexes, handwritten notes and delayed transport of possibly dated hardcopy reports and articles, as it is to let him sit in traffic.

The trends in information technology and in information management and the sheer growth in the amount of information are not ambiguous. Library institutions must build local electronic information capabilities and form alliances with state and local government and with educational institutions to build an electronic infrastructure. It is also clear that there is already an information elite which is distinguished by its access to electronic information.

It is not a question of playing a waiting game and hoping to catch-up later. Waiting builds in the public mind an image of the library as a cultural monument of the past, which does not require new public funding. Waiting reinforces the development of a society that treats information as a commodity, in which information technology will bypass free public libraries. Waiting means that information technology will not be available at any level as a public resource for the average citizen in a time when it will become increasingly important to people not only in itself but as a direct resource for solving their problems and for creating new knowledge.

FUNDING ALTERNATIVES

However urgent the case for public funding of electronic and other library services, there does not seem to be substantial amounts of new money out there for the public library at the federal, state or county levels. The Library can't respond to the information future with just the notion of more money. Reallocation of resources will need to be carefully considered. Recognition that there are cycles of technology investment and that different electronic systems or functions may be at different lifecycle stages may decrease the pressure to get it perfect on all fronts in a short time frame. There are opportunities to choose other funding alternatives that offer smaller or incremental revenue rewards.

REALLOCATION OF FUNDS

One source of technology funding is through the reassignment of funds from other parts of the budget. The public library will have to review other fundamental costs for new buildings, for the land for new buildings, for remodeled regional libraries, for speciality information services and for printed reference sources if it is to fund a service model which uses information technology to offer end user electronic services. There is some indication that County budget planners would be open to this kind of thinking. An example of reallocation: What if we 'moved' the operating expense component of the popular adult book collection and program and of the children's collection and services of the Boyds Regional Library to the new Ijamsville Community Library instead of adding these new components to the base? This might free 'new' money for the development of information objectives at Boyds, and focus remodeling money for Boyds on information services and an electronic infrastructure. What if an underutilized library building was closed and its operating expenses were used to add services which could be delivered electronically at all other library sites and directly to the homes of users?

FEES FOR SERVICE

User or access fees will continue to be a major public policy issue in the County. We have had good success with the Library Express program in which $210,000 in new collection money is predicated not on fees, but on revenue generation through fines. The Department's POLICY ON BASIC AND FEE-BASED LIBRARY SERVICES was written in 1984, but plans for a County "...environment of increased demands on resources and a stable tax base".

It suggests in the categories of 'partially subsidized services' and 'fee supported services' programs which it may now be time to explore. They include:

- brokering rapid document delivery services

  Our near term expansion of access to electronic bibliographic databases will undoubtedly increase the need for timely document delivery, and it is an area in which private vendors have outstripped libraries. The CARL document delivery option discussed earlier includes this kind of fee based service.

- provision of extensive print or electronic copy from electronic systems

  The introduction of the CD-ROM and telefacsimile machines has introduced printed copy for personal use derived from electronic sources.

- highly customized and in-depth research services for businesses and individuals.

  The Bethesda Regional Library's Business Information Center has reached the limits of its ability to provide customized information services to some clients.

When developing any model for fee based information service, the Library should consider the incorporation of information technology. These models could include technology which would serve staff and public end users with the mimimum of training.

GRANTS

At EDUCOM the feeling was that grants and corporate support for technological projects were drying up except for cutting edge projects. It is assumed that the Library does not have staff available for a cutting edge project. The Library will have stiff competition for corporate technology support from business. The University of Maryland Shady Grove campus is looking for money for its biotechnology lab. Giant is funding computers for schools. Nevertheless, grant funding should not be dismissed. It was the source for the Howard County and University of Houston projects mentioned earlier. When writing other kinds of grants, the possibility of delivering high quality service through electronic means should be considered and incorporated in the funding requests. This is sometimes the only way of getting hardware. Two of the department's CD-ROM workstations and all four of its fax machines were funded through the Health Information Center grant. However, current LSCA funding guidelines preclude hardware for integrated library systems. This means the Department cannot fund the PAC terminals necessary to maximize the use of innovative enhancements to a librarywide network with state grant support.

COALITION BUILDING

A last way of funding electronic services, or more precisely developing services at minimum costs, is through coalition building and joint development. The State Network Plan is a foundation for electronic infrastructure development. Would broader access and better systems be possible in Maryland if libraries join with academic institutions and schools to build networks that will benefit them all? On the local level one of first and most enthusiastic clients for dial-up to the PAC will be the public school system. Alliances between public libraries and the education community are critical because education is seen as a more natural setting for information technology and the expansion of education will be a critical political issue in the 1990's. If the County provides the interconnections that allow information to be shared between service providers and appropriate publics the Library will be able to provide more information access at less cost. The Department is already exploring such interconnections with other departments in the areas of community and business information. The library and information clients of CARL Systems, Inc. also constitute a coalition of electronic information users. If the University of Maryland becomes a CARL client, as predicted, a new opportunity for electronic service planning will emerge in Maryland. CARL is also building coalitions with the vendors of electronically stored databases. Cooperation among the vendors of electronic library systems and services could greatly assist libraries who use these services. CARL is currently exploring connections between its automated acquisitions module and the Baker & Taylor, a principal wholesaler of books and other materials used heavily by the Department and other East Coast public libraries. This connection would greatly enhance electronic capabilities in the area of order placement and reception in public libraries.

ORGANIZATIONAL CHANGE

> "The greatest challenge facing library leaders in the next decade is not to implement new technology, it is to implement new entrepreneurially oriented management structures and cultures in our ailing industrial-age libraries." (LJ DeGennaro p. 43)

> "The other critical thing to remember is that large libraries have committed the cardinal sin of implementing the functional systems of their organization before they have implemented the management systems." (URBAN p. 92 Dowlin)

DeGennaro and Dowlin point to an era in which libraries will face challenges to their traditional mission and organization. Choices about the preferred role of the library in the community will need to reexamined.

PLANNING & ROLE SETTING FOR PUBLIC LIBRARIES, a publication of the Public Library Development Project of A.L.A., introduces eight basic library roles. (**Figure 27**, p. 50) It suggests that libraries should select the roles which best fit their community, and that "...no single library can expect to fulfill all roles with excellence, so each library must focus its resources on a limited number of roles." (McClure, p. 64) Some of the basic roles are alluded to in the scenarios and elsewhere in this paper.

Choices about the use of information technology may be the impetus for debate about library roles in the 1990's. Information technology lures the information professional with its power to increase the efficiency and effectiveness of individual information seekers, reference librarians, library units and the Library itself. It may have the power to transform the Library, changing the basic ways librarians work and in some senses the nature of what librarians do. Information technology decisions place pressure on the library organization to be clear about the roles it wants to pursue, to make innovative resource reallocations, and to be clear with staff and the public about what services are offered and those which have been sunseted or bypassed. Planning, fundraising, marketing and market analysis, and training resources will need to be matched to the primary roles chosen.

PUBLIC LIBRARY ROLES

POPULAR MATERIALS LIBRARY: The library emphasizes providing high interest, popular materials in a variety of formats for persons of all ages.

COMMUNITY ACTIVITIES CENTER: The library is a central focus point for a broad expanse of community activities, meetings, and services.

REFERENCE LIBRARY: The library actively meets the needs of community residents for timely, accurate information in their pursuit of job-related and personal interests.

COMMUNITY INFORMATION CENTER: The library is a clearinghouse for current information on community organizations, issues, and services.

CHILDREN'S DOOR TO LEARNING: The library encourages children to discover the excitement of learning and explore a wide range of educational opportunities, programs, and services.

INDEPENDENT LEARNING CENTER: The library supports individuals pursuing learning on their own at all levels, including citizen education, hobbies, cultural interests, career development, and self-improvement.

FORMAL EDUCATION SUPPORT CENTER: The library assists students of all ages in meeting educational objectives during their formal courses of study.

RESEARCH CENTER: The library assists scholars and researchers conducting in-depth and studies as they investigate specific areas of knowledge and create new knowledge.

Figure 27

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NEW SERVICE OPTIONS

Technology certainly increases the number and complexity of options for service delivery in libraries. There are more options for patrons self-help using electronic systems designed for this purpose. There are greatly expanded options for home and worksite delivery of service. As library users have more bibliographic access through the use of PAC's and other bibliographic databases, document delivery of both materials owned by the library and those which are owned elsewhere becomes a critical service issue. Users will want speedy, convenient delivery. Telefacsimile transmission and computer to computer transmission of documents are added to the hardcopy transfer option of today. Another set of choices arises because document delivery service has grown up in both the public/library sector and the private sector. Expanded demand for document delivery is one example of the blurring of the line between reference and research library services.

ADMINISTRATION AND PLANNING

Library administrators will find that some longstanding concerns are reemphasized as a library selects more automated service options. Planning stakes are raised, because information systems can have high cost and high risk. Technology planning and budgeting will continue to be an ongoing process. It will need to be more fully integrated with planning for buildings and for collection development and management. It will require that library systems planners continually upgrade their knowledge of technical developments. Planners, in general, will need more refined assessments of costs.

The old tasks of coalition building in the community and in national forums will go on, but librarians will be working increasingly with non-library providers of information whether it be educators, designers of government funded databases, or private sector vendors. Free vs. fee issues will be more substantive in the 1990's. Librarians may find themselves playing entreprenuerial roles. Fundraising in the private sector and grantsmanship will continue to increase in importance. The needs of organizations to monitor techostress and to retrain employees in the 1990's have already been mentioned.

Change management will be critical, especially since libraries will be looking at disconcerting reallocations of resources and rearrangements in services components. By the year 2000 library hardcopy collections, library buildings and other service components may be less fundamental to the library mission. Flowing from this will be changes in the roles of library units and of individual librarians. The organization will need high staff commitment to these new roles. High commitment is "...increasingly a key ingredient for organizational effectiveness, especially in advanced (information technology) environments. (Walton, p. 15)

As a background for resource allocation the library will need better information on user needs and behavior from many library and non-library sources on an ongoing basis. Libraries, just as companies, will need to become more client-centered. The Department is familiar with collection use reports, and the process of integrating the collection development reports from the CARL Integrated System into the selection process is ongoing. Information on how citizens use libraries needs to be expanded and refined. A recent study has reported that convenience of hours is ranked consistently in the top ten of measures of effective libraries. (Childers, LJ p.48) The Facilities Plan found that the population in the immediate vicinity of a library building is a key predictor of use. These are longstanding basic service decisions based on client data. The Library will need to be aware of information needs and behaviors of potential library clients outside the library setting. This additional client-centered information will be needed not only to make decisions about resource allocation, but for public relations and marketing, for end user training development and, of course, for technology planning.

ORGANIZATIONAL STRUCTURE

Many recent books about the conduct of business in the 1990's agree that organizations will need to respond faster and more creatively on a consistent basis. Most predict that information and other technology will be needed to create this response and that the management structure of organizations will change. Middle management will be reduced. Managers may supervise more staff and use electronic systems to support communication. Electronic communications can foster regular, personal communications between staff in similar roles in different locations. They are also a means of supplying to staff the timely, high quality management information needed to do more complex jobs. Management information will need to be shared more widely and more rapidly. Staff will work more in teams, and will communicate electronically both in their unit and across disciplines. (See **Figure 28**, Tuttle p. 168) The organization will rely more heavily on the feedback of staff and on staff initiative. Staff will do more client centered reporting as products become more customized and the product life cycles shorten.

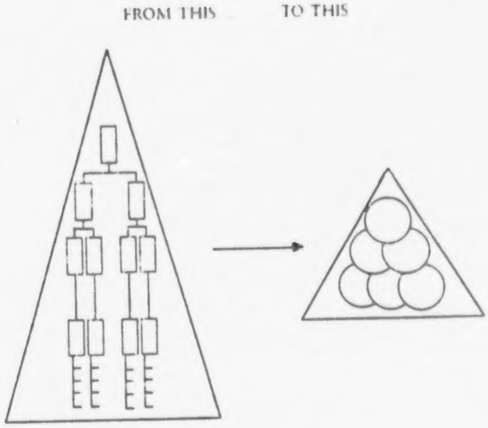

Figure 28

The possibility exists for very rapid changes in assignment for library staff and units. There will be few guaranteed "turfs" in the future. For instance, the lines between technical and public services functions may be less clear. Dial-up users of the PAC may, for instance, be as 'visible' to Information Management staff in Technical Services as to staff on the floor of branches. Reference 'collection development' and information systems development will converge. Both divisions will work together on the introduction of technical innovation and on associated marketing and training for staff and citizen end users.

ROLE OF LIBRARIANS

The following are likely roles for librarians and paraprofessionals as more information technology is introduced in the library workplace:

- Technology educator and transfer agent
  - provides a non-threatening, friendly introduction to the automated library and to information technology in general
  - interacts with machines skillfully, fully understanding the hardware and software
  - teaches the operation of systems to new users as needed
  - helps users with special anxieties and needs use systems and equipment
  - helps users select the best electronic tool to meet their information need
  - designs or provides informational literature for users

- Research advisor
  - maintains excellent human-to-human communication skills
  - identifies patrons who have had unsuccessful searches and provide them assistance, identifying alternate search routes, terms and concepts
  - helps users cope with information overload by sorting appropriate information, by refining search strategies, identifying the most efficient access and introducing new search aids, etc.
  - keeps users up-to-date on new electronic information sources
  - searches sophisticated sources that are unfamiliar to the user
  - refers users to additional systems and sources
  - assists or makes document delivery arrangements

- Information selector, evaluator and manager
  - knows the contents of electronic information sources and evaluates their timeliness and quality
  - selects and introduces new information products that meet the library's information service goals
  - analyzes and reports the information needs of users; profiles users
  - moves from a research intermediary role to a role as a manager of technology

- On the site technician

  - troubleshoots equipment
  - proposes and implements small workstation upgrades
  - arranges for maintenance and repair
  - develops preliminary technical options for upgraded systems
  - monitors ergonometric needs of staff and patrons using electronic equipment

- Model for artificially intelligent systems

  - Designers of systems which use artificial intelligence often interview the relevant professional. By working with these designers librarians may extend their expertise to users in other places and to more users than they would ever serve face-to-face.

- Database manager

  - Develops non-bibliographic, library databases
  - Maintains non-bibliographic, library databases
  - Markets library databases and information networks
  - Negotiates the rights for access and interconnection to other local databases

- Access advocate

  - reaches out to reluctant users to help them use systems
  - demonstrates the special features of systems such as SDI to potential users in and outside the library
  - studies and supports the needs of home and workplace users
  - supports a basic level of free electronic information service for all citizens
  - promotes public access to government funded databases
  - encourages the development of public policies which insure citizen information access

There are certain themes implied by the above list. Along with many of their users, library staff will have a need for lifelong education. More sophisticated end users will probably use both electronic and traditional sources more heavily, and will expect search intermediary services to help them with unfamiliar products and databases. Staff will be supporting the needs of users they never see face-to-face. Other patrons will want more friendly face-to-face service. "The more they rub up against sterile, hard-edged technologies, the more they seek to add a human element in their lives." (Cetron, 205) In planning information services librarians will be making choices between systems that require, for the present at least, their mediation and systems that serve end users directly. Public library staff have always had a strong public service tradition. Librarians have always strived to know the content of the collection. They have always had enthusiasm for the information hunt, to locating data no matter what the source. This commitment and skills will transfer to the electronic information age. Linking the individual to knowledge is still the mission.

SCENARIOS

The question is not what information technology the Library should buy and how much will it cost, but rather what do we want to do? What services does the Library want to provide? Technical feasibility alone is not a reason to implement technologically based services.

There is obviously more information technology out there than the Library will ever afford at whatever the level of its funding. There is or will be information technology available to support many kinds of library missions. Its usefulness is not confined to the development of higher level information service.

What follows are four scenarios that highlight some choices the Library might make about its program of services and about the staging of information technology in the next decade. Although a scenario could have been written that specifically rejects information services supported by technology, all of these scenarios assume some use of information technology. All of the scenarios assume an ongoing commitment to a strong circulating book collection and a full program of children's services.

The sections, "What the Patron Does" and "What the Librarian Does" illustrate some of the possible results for the public and staff. The scenarios also contain some adjustments for high and low funding situations. The information systems and service development aspects of the scenarios taken together might be seen as one continuum to a final end state. Each scenario can also be taken as a possible end state for 1995 or 2000 in itself. A large number of choices and permutations are possible. Only a few choices and some of their ramifications are included. It is hoped that they will stimulate thinking about other possibilities.

SCENARIO ONE

Patron Sketch

35 year old single mother
3 year old son
new to Montgomery County
employed by High Tech Council
part-time planner for proposed Info. Tech. Center
avid reader of science fantasy
uses Council micro for WP

Service Needs

programs for children
day care selection information
recreational reading
business, planning & general info. on County
background reading on information technology and systems

What the Patron Does	***What the Librarian Does***
Asks for picture book recommendations *Borrows picture books* *Brings son to storyhour*	*Learns and understands J collection* *Gives friendly J reader service* *Plans & presents storyhours*
Browses & borrows science fantasy paperbacks & videocassettes	*Designs display space and plans ongoing display projects.*
Uses PAC to locate books & UNCOVER to locate articles on the information age.	*Assists patron in initial use of the PAC*
Locates and borrows relevant titles at her local branch.	*Helps patron locate articles listed in UNCOVER*
Uses Community Info database on the PAC to identify Child Care Connection. Calls them and is forwarded for a fee a list of licensed daycare centers in her area.	
Uses CD-ROM MICROCAT to locate books on information technology, requests interlibrary loans on cards in branch.	*Staff reviews ILL requests and suggests information that will be difficult to obtain quickly. Suggests alternate way for patron to obtain this information.*
Mail orders Office of Technology Assessment reports from Government Printing Office.	*Sends other interlibrary loan requests to Central site.*
Uses Government Information Center collection at Rockville to locate and review County planning documents & demographic info. *Takes handwritten notes, which are typed into Council's WP program.*	*Government information reference specialist's assists patron in identifying the best sources for County demographic and other statistics.*

With high/alternate funding

Uses touch terminal orientation system to locate children's programs, and watch video introduction to regional collections.

With high/alternate funding

Updates orientation network program information.
Makes quarterly video on regional collection & service for orientation network & cable use.

THE LIBRARY - SCENARIO ONE

Library emphasizes the roles of popular materials center, door to children's learning and community activity center. The Library builds and maintains at a central site a spine of basic electronic service for all agencies. A database available on the spine bolsters the library's role as a community information center.

Program Priorities

The library's service and marketing emphasis would be on friendly human services offered in the library, for example children's readers advisory service and outreach and humanities programming. A strong popular book and audio-visual collection would be maintained. Expansion of holdings in videocassettes and in new audio-visual formats such as interactive videodiscs would be addressed in the 1990's. However, books remain a primary recreational and information media. The non-fiction is heavily tied to timely and short information need cycles. Attractive display and effective marketing of this collection is emphasized. Alluring design of library facilities and high level of personal help to users is seen as a high touch antidote to an increasingly technological society.

Information Systems and Services

The Spine

In this scenario electronic access would parallel the traditional access offered to the collection and services of the library, i.e. the library offers an electronic catalog or indexing for monographs (PAC) and periodicals (UNCOVER) and automates the traditional community information files (Rainbow Directory and branch files). Although end users would be using electronic systems such as the online public access catalog, the electronic services spine would be in the background, used primarily to provide efficient and slightly enhanced support for traditional service. If other database components, such as an electronic encyclopedia, are available that would be frequently used by a broad section of the general public at all agencies and that could be mounted at a reasonable cost ($20,000 per annum) on the integrated library system, these would be considered for addition in the mid-1990's.

Special Information Service

The Library maintains the current regional specialties and enhances only Bethesda and Wheaton specialities with electronic services and products. These products are added only when funding can be reassigned from the current operating budget for reference materials or when alternate funding can be found. Online search service is through an intermediary and extended searches are provided at fee for service. The current electronic services are allowed to grow incrementally at a low fixed rate each year. In general, standalone electronic information products would not be added in other locations, unless public access microcomputing services and equipment could be refocused or unless grants included electronic service options.

Interconnections

Library arranges and maintains dial-up access to the integrated library system databases from government offices, homes and businesses on a read only basis. Without grant or corporate funding the Library would not build local area networks to link CD-ROM products and/or other functions in these regionals in the next five years. Linking the resources placed in these special reference centers to other agencies would not be a priority. In large units local area networking for office automation would be maintained. Linking office automation applications and knowledge databases on the same network would not be a priority.

Document Delivery

Except in specialties, the Library deemphasizes sophisticated connections with remotely stored bibliographic and full-text databases and related document delivery services. Document delivery is through MILNET which is not interconnected to other electronic systems. Librarians make referrals to private document delivery vendors. Document delivery for periodicals in the system and from other sources would be enhanced in the mid-1990's by the addition of more microfiche and the extension of the telefacsimile network to all agencies. The Library would charge for photocopy associated with fax transmission. In the mid-1990s the library would accept requests for fax delivery directly to homes and worksites.

Office Automation

Office automation is available to staff only and focused on basic applications: word processing, electronic mail and spreadsheets. The addition and training on new applications is not emphasized. The Library decides not to migrate toward multi-functional, full-service workstations for end users in any library. Library sunsets public access microcomputer projects which emphasize office automation applications. If the customer wants a high level of customized interface with electronic services and wishes to manipulate the information or data recovered he will have to have home or business access and equipment or is referred to private sector services.

Selected Staff and Organizational Activities

All staff would be trained to use the main functions and databases available on the electronic spine service. Staff would instruct the public in the in-house use of the PAC, UNCOVER, etc.. Instructional materials and methods would be developed for systemwide use and stress a high level of uniformity and consistency.

Technical Services has the primary responsibility for developing options for hardware and software associated with the spine services. Technical Services and Public Services work together to design the orientation to the spine electronic services. Technical Services would provide help to dial-up users trying to access the library's databases and be the location of the Dial-up Helpline.

Administration would emphasize grant development in the area of humanities and educational programs and services for children. The system would support staffing levels needed to implement these projects.

Funding Adjustments

High/Alternative Funding Adjustments

- Pilot a Metro Montgomery, economic development database to the PAC.
- Link the PAC to County and State information networks
- Develop simple interactive touch screen orientation network of terminals for the entrance way of all agencies.

Low Funding Adjustments

- Delay the implementation of UNCOVER and COMMUNITY INFORMATION components of the PAC and defer other database additions to the spine services.
- Reconsider the concept of information specialties cutting some or all of the specialties.
- Reduce the reference print collections in many agencies making them entirely popular book and A/V service centers for adults and children.
- Cut hardcopy periodical subscriptions.

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SCENARIO TWO

Patron Sketch

AS IN SCENARIO ONE AND
has purchased home computer and modem
son is in kindergarten
60 year old mother has moved into her home
mother is being treated for adult onset diabetes
now works full-time for High Tech Council

Service Needs

needs information on available online services and bulletin boards
needs information on mother's illness

corporate information on key High Tech Council contributor
needs examples of other Info. Tech Center Programs

What the Patron Does	What the Librarian Does
Calls library when she has difficulty gaining access to Library PAC with her new computer.	*Learns common problems of dial-up users and answers Helpline phone one evening a month.*
Dials-up Library PAC and locates books on microcomputer communications and commercial database services.	*Staff member answers telephone request to hold or transfer books located on the PAC by dial-up users.*
Also locates general books on diabetes and related UNCOVER articles. (Most in HIC journals) *Goes to HIC to get copies of articles in health journals.* *Uses CD-ROM package which combines food values of specific products, and protocols for special diets to print out info. for mother.*	*Suggests patron may want to use other resources of HIC.* *As a result of later in-person interview, runs online search on the latest dietary programs for older diabetics.* *Faxes search results to RV library for pick-up.*
Cannot find information on model Info.Tech Center programs	*Refers patron to the Business Research Service.*
Contacts Business Research Service requesting information on models be located and delivered within seven days *Goes to Bethesda for consultation.* *While at Bethesda uses Million Dollar Disc & Disclosure to locate corporate info. Downloads to disk for home use.* *Receives information by fax and by Federal Express at the High Tech Council*	*Business Research Center staff Has information consultation with patron. Agrees on services to be performed & fees. Does appropriate online & CD-ROM searches. Orders articles from NTIS rush fax service. Electronically orders documents from Technical Docs. Inc., FedEx delivery.* *Introduces patron to operation of corporate info. databases on CD's.*

Attends program on controlling long term medical expenses

Uses Metro Montgomery database to locate and download updated M.C. demographic info., etc.

With high/alternate funding

Uses BusLan to locate corporate information. High Tech Council subscribes & has password

Applies for and manages grant for health programming for the elderly.

Works with technical staff to develop and maintain content of Metro Montgomery.

Works with OED, Chambers... to develop and to market Metro Montgomery.

With high/alternate funding

Interviews patron and introduces her to Metro Montgomery
Organizes and supports the ongoing process of updating Metro Montgomery

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THE LIBRARY - SCENARIO TWO

The Library maintains its roles as a popular materials library, a community activities center and a door to children's learning. To the enhanced role of community information center, the library adds additional reference capabilities in the area of health and business reference.

Program Priorities

Same as Scenario One except that health and business information services are added. They are made the Library's information focus for the 1990's. A large portion of the library's fund raising efforts and its information marketing and image is tied to the development and delivery of these services. These information initiatives are reflected in the development of the non-fiction collection for children and adults, in the development of electronic services, and in library programming.

Information Systems and Services

The Spine

Remains essentially the same as in Scenario One. Community Information File expansion is continued. Development of the Metro Montgomery database is undertaken in connection with the business information service priority.

Special Information Service

The Library adds electronically enhanced, primarily in-library services in the areas of business and health information. The development of a partially subsidized, fee based electronic services will be emphasized at the Bethesda Business Information Center. This will be integrated into a full service business information unit, which would aim at the complete recovery of staff wages and salary, of hardware costs, of costs for searches, document delivery and other customized service done by staff intermediaries for patrons. The Library would subsidize the service with space and utilities. This center would also add electronic services for direct use by the public, and the Library might develop a local area network to provide multi-workstation access to CD-ROM business databases on a partial cost recovery basis. More advanced information delivery systems ABI/INFORM-BUSINESS PERIODICALS on disc product which combines a bibliographic database with full text retrieval and printing would be offered on a partial cost recovery basis.

The Health Information Center would be developed as a largely free service aimed at individual consumers of health services. The Library would seek alternate funding for these services through grants, private sector gifts and through cooperation with other health service providers in the County.

The Rockville Regional Library would develop electronic information services to the degree necessary to mesh with federal electronic information dissemination to selected depository libraries.

Interconnections

The Library once again would not place a high priority on linking other sites to the specialized information available at the two regional sites or wide area networks. These centers would however plan to install sophisticated workstations that allowed end users a high level of customized information searching in networks and in remote databases and which would allow data retrieved to be manipulated using applications programs resident in the workstation.

The administration would work with county and state agencies on the development of multi-agency networks. The Library would support linkage to existing networks where it could be provided at a low or no cost to the Department. In addition to dial-up access the Library would make the PAC and other core. Such connections might include the G-loop and the EOB/COB token ring backbone.

Document Delivery

The fee supported business research service at the Business Information Center would provide full document delivery service from commercial vendors and from libraries. Delivery would be by mail, by messenger, by fax or other electronic means. This service would be on a cost recovery basis.

The Library would subsidize the delivery of health information to individuals setting aside a specific percentage of the materials/online budget for this purpose. Direct delivery to home or to worksites would be done as needed, but not as a standard operating procedure.

Office Automation

Same as Scenario One except that some staff workstations and specialty information center workstations for end users would allow the use of both the spine databases and office automation applications.

Selected Staff and Organizational Activities

All information staff would need additional training in the new databases on the spine (Metro Montgomery and the PAC's and databases on networks to which the spine has been connected). Some librarians who work with community information, business and health information would begin to shift their roles from face-to-face library service to the development of databases, the selection and management of electronic services, the expedited delivery of information and documents to the user and the entreprenuerial skills associated with a fee-supported service and a service heavily dependent on alternate fundraising.

Technical Services would need technical staff to maintain the large in-library spine network of terminals and workstations and the additional multi-functional workstations.

More administrative staff time would be devoted to fee/free policy, to fundraising and grant proposals in the area of information service, and to maintaining contacts with network administrators at the county and state level.

Funding Adjustments

High/Alternative Funding Adjustments

-Library would add dial-up service to the Business Information Center BUSLAN. Use by the reference staff in other libraries would be subsidized. Use by individuals and business would require a password for which an annual fee would be charged.

Low Funding Adjustments

-Specialties (including reference, circulating materials and programming components) and special interest reference sections (Glass, Travel, some JIC's, local history, etc.) which are not related to the health and business focus might be discontinued.

-At the sites where the BIC and HIC are being developed other service components might be dropped.

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SCENARIO THREE

Patron Sketch

AS IN SCENARIO ONE & TWO AND
son is now in first grade
mother is feeling better
but isolated
Info. Tech. Center is in
early design phase

Service Needs

needs recreational reading for son
needs to locate community activities for mother
needs specific information about systems options, information technology developments
needs information about local companies that are potential bidders
needs information about vacant land in 270 Corridor

What the Patron Does

School librarian uses PAC to identify titles for son's reading program using link between MCPS Schoolnet and CARL system.

Dials-up Community Information database on PAC and identifies senior social clubs.
Also finds Rockville Senior Recreation Service, which is identified as being on the Rockville Citynet. Rockville Citynet is on PAC menu.
Prints list of senior activities from Rockville Citynet.

Spends afternoon at Year 2000 search center at Rockville.

Uses public access terminal of GEOBASE to locate vacant land in Germantown area.

Uses advanced research station to check on federal and state system's contractors using FED/STATE CONTRACT CD-ROM. Downloads the information & transfers to word processing.

What the Librarian Does

Does annual briefing for school librarians' on the PAC and its database components.

Provided support to City of Rockville in design of Rockville Citynet in return its use on library PAC and City contribution to funding of Community Info. database.

Orients patron to Year 2000.

Authorizes use of GEOBASE, a restricted use regional government database with some confidential components

Develops documentation for the use of the advanced research workstation. Provides demonstrations and orientation to the workstation.

Uses PAC gateway menu to log on to DIALOG.
Uses BIDNET database to update contractor list just assembled. Downloads information, transfers to word processing and integrates with previous list.

Orders program of requirements of California Technical Information Center contract reported out for bid on BIDNET, using credit card.

With high/alternate funding

Suggests commercial databases most appropriate to patron's search problem.
Assists in searching less user friendly databases.
Arranges 'temporary' DIALOG password for patron.

With high/alternate funding

THE LIBRARY - SCENARIO THREE

The Library places additional emphasis on its roles as reference center, community information center and research center.

Program Priorities

Program of a regional library is redirected toward expanded information services and begins to function as systemwide research/reference hub. An additional knowledge based network, beyond the spine, is added.

Information Systems and Services

The Spine

The basic core of electronic access tools and popular databases maintained centrally and distributed on a read only basis is maintained.

Information Service Development

The Library Department develops and maintains a high profile, publicly funded Year 2000 Citizen Electronic Research Center. This service would be the focus of the new Rockville Regional Library project. It would focus political, business and public attention on a library building and service model that would be the prototype for citizen information service of the future. Partially or fully subsidized fee based services will probably be offered, but the goal of the project would be local government acceptance of the need to fund a high level of information age electronic library services for free use by citizens.

The present general and special reference collections of the Rockville Regional Library would be maintained, the Telephone Reference unit and services would be integrated into the information service package of the regional. The Library would maintain popular collections for adult and children's readers, but would drop non-informational programming and provide no specialized staffing for children's and adult services beyond the small community level. One or two local area networks and associated database products and three to six high end workstations, multiple telefacsimile machines, and a network of staff terminals which could be used for office automation, access to the PAC/core databases and to communicate with users would be part of the requested day one components for this Library.

Specialty Information Services

Near term enhancements of the Bethesda and Wheaton specialities with electronic services and products would be held at the Scenario One level, i.e. additions only when funding can be reassigned from the current operating budget for reference materials or when alternate funding can be found. Their current electronic services are allowed to grow incrementally at a rate of about 5% a year. Without grant or corporate funding the Library would not build local area networks in these regionals in the next ten years. By the year 2000 the services available at the Rockville site would be linked to the specialty services at the other regionals.

The Library could choose parallel development of more sophisticated information services in which the Rockville prototype is used as a model for the electronic renovation of the regional libraries so that appropriate features of the Center can be added at these sites. Staff to support specialized information services is resident at all regional sites. Inter-organizational information systems allow these specialist's to communicate with one another, with other branches and with clients at home or at work.

OR

The library could choose instead to make one site the hub from which more advanced services are developed and disseminated. Within five years the Library integrates Health and Business reference into the Rockville site, making it the central reference facility for the Department. The Library develops network connections so that specialists can communicate by voice and electronic mail, by telefax and via the spine to all agencies. At this site the content of local databases would be developed by expert staff and maintained for distribution on the spine. This is the site at which home and business delivery of customized reference products are based. The Rockville prototype is used as a model for the electronic renovation of the regional libraries, so that they provide the most popular electronic research tools as an enhancement to their general reference service on site.

Interconnections

The Library develops network connections so that selected electronic databases available at the Citizens Electronic Research Center are made available via network electronically at other regional sites and that electronic services introduced at the Health and Business Information Centers can be accessed at the Rockville site. Dial-up access would be provided to some Year 2000 center electronic tools.

The Library would encourage developers of County government, Montgomery County Public School, Maryland college and the Maryland State Library Network to provide access to the spine databases and subsidize the link to major networks of this kind in the Library budget.

Document Delivery

Year 2000 center provides electronic document delivery options and fax to home and office at a nominal fee.

Office Automation

As in Scenario Two.

Selected Staff and Organizational Activities

Librarians in the Year 2000 center would be responsible for identifying databases and other electronic services which have priority for export to other locations or for electronic access from other locations. Additional staff would be needed at this location for management of local databases and for outreach to other providers of local databases. Technical Services staff would maintain communications with various networks.

Funding Adjustments

High/Alternative Funding Adjustments

-document delivery to home or worksite via fax and computer is part of basic service of the Year 2000 Citizen Electronic Research Center.

-Document delivery from some commercial database vendors is subsidized by the Library.

-electronic services heavily used at the Research Center are made available by dial-up or on the spine.

Low Funding Adjustments

-Some libraries offer only browsing collections of adult recreational reading and audio-visuals. Children's services and collection and community activities are emphasized.

SCENARIO FOUR

Patron Sketch	***Service Needs***
AS IN ABOVE SCENARIOS AND son has homework mother is increasingly weak and requires more care	*son needs information for school report on earthquakes needs to be able identify and obtain quickly a range of regionally owned materials*
patron is now located full time at new Information Technology Center, and has powerful workstation	*needs to link Information Technology Center with other information sources* *needs timely economic development information to identify & serve potential clients*
needs break from pressure	*needs escapist reading and viewing*

What the Patron Does	***What the Librarian Does***
Through County information network patron access the library information system, using this system:	
Locates name of new support group for families of frail elderly and downloads meeting information to her personal database and calendar.	*Manages the operation of the library information system.* *Uses extensive reports from the library systems to monitor and meet information needs*
Reviews information on Metro Montgomery and GEOBASE and downloads data to a spreadsheet.	*Markets information service of the library using print, on air, electronic bulletin boards.*
Enters new information about the operation of the Information Technology Center on the Metro Montgomery database using authorized password.	*Visits new businesses and demonstrates the library information system. Maintains community information and Metro Montgomery database, monitoring electronically the new dial-up entries and revisions made by community groups.*
Places a request for reference assistance in locating biographical information on obscure science fiction writer of the 19th century.	*Replies by phone, fax or computer to reference requests.*

Uses system as a gateway to the Maryland State Library Information Network. Identifies book on marketing information services, and places interlibrary loan for delivery at Gaithersburg Library

Using Library Information System as a gateway, dials-up directly to DIALOG and downloads the result of her SDI search on new companies in Montgomery County with info.tech. SIC codes.

With high/alternate funding

Locates new science fiction title and places a request for UPS delivery, and transfers funds to cover fee electronically.

Orders cablecast of BACK TO THE FUTURE - THE BALLET for weekend.

Selects appropriate databases and vendors and contracts for gateway arrangements.

Provides reference services not available on the library information system from print and electronic sources at the hub library.

With high/alternate funding

Manages unit that arranges direct delivery of hardcopy and related billing system.

Manages the Library Community Cable Service. Selects films, clears for cablecast, etc.

THE LIBRARY - SCENARIO FOUR

The Library begins to move away from face-to-face in-house reference services in most agencies. It's resources are committed at library buildings to its role as a popular book center and a gateway to reading for children. Resources which support its function as a a reference library, a community information center and as a gateway to research services are heavily devoted to electronic home, school or office delivery of information and information services, documents and materials.

Program Priorities

Most community and branch libraries offer only Library Information Network reference service. They do not provide print reference collection or mediated reference service. Marketing of information service will be heavily outside the library and will be directed at users of electronic bulletin boards and commercial electronic information services.

Information Service Development

The Spine

The spine becomes a part of a more interactive and interconnected Library Information Network, offering more databases and databases resident in other library systems.

Specialty Information Service

The Year 2000 Center is maintained. Electronically stored information that is not available directly through the Library Information Network may be accessed there. Unique print reference material and serials and documents on microform are concentrated at the Center, and delivered by fax to other libraries and to Network users. The emphasis will be on wide access to specialty collections and librarians through electronic connections to all libraries and to homes and businesses.

Interconnections

The Library Information Network offers:

-direct rather than dial-up connections for many users in libraries, county supported agencies and local schools and colleges
-access to many non-library County databases and other publicly funded databases
-gateway access to commercial databases
-interactive connection to Metro Montgomery and selected other modules allowing new information to be added to community information files, etc.
-E-Mail through which users may request reference assistance electronically
-document delivery interfaces through which materials stored on microform or electronically in the library collection and materials owned elsewhere may be requested by users on the appropriate fee or free basis

Office Automation

All workstations for library professionals managing electronic systems and library agencies will have the Library Information Network and office automation capabilities. More of these workstations will allow librarians to review data and reports about the use of the system and of the information on the system. Librarian managers of electronic systems will have the clearance and access to do some kinds of system management now restricted to Technical Services.

Library will cap the number of in-library workstations that offer office automation functions to end users, since most end users will be working from home and can use their own equipment and programs.

Selected Staff and Organizational Activities

All library staff is extensively trained in the use of the Library Information Network. Most professional staff members can respond to voice and electronic communications from users requesting help.

Reference and information specialists are involved in the design, maintenance and analysis of information databases and of electronic information systems. Library staff is frequently outside the library building offering on site orientation to the Library Information Network programs at schools, businesses and civic meetings.

Funding Adjustments

High/Alternative Funding Adjustments

-Library Information Network allows requests for document delivery of materials from the popular collection on a fee basis.
-Library offers library informational programming and selected commercial non-fiction programming by viewer request on cable system.

Low Funding Adjustments

-Library will phase-out reference and other collection components in some buildings. In these buildings the library will make space available in its buildings for community programming related to its remaining services and programs.
-Library will explore adding the Library Information Network available as a commercial database when accessed outside metro Washington and Maryland.

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End of Scenarios

RECOMMENDATIONS

While it is possible to choose a public library mission which is not an information mission or which has very narrow information goals, broad and high priority information service goals will require a high investment in information technology over the next fifteen years if we are to avoid institutional obsolescence and move toward a Year 2000 Citizens Electronic Information Service.

The Department has taken reasonable steps in the development of its information systems in the 1980's. The CARL Integrated Library System and other existing systems are a good foundation for the future. This paper contains other models for change. Planning and investigation of the next steps in electronic service development will be an ongoing task of the 1990's. No one plan can be the blueprint for the future. On the basis of this study, the ideas and near term strategies below are recommended.

CONCERNING INFORMATION TECHNOLOGY 'SYSTEMS'

CARL Integrated Library System and the PAC

1. Placing the Public Access Catalog at the disposal of the public in all agencies is the most immediate and important information technology goal. Funding of the PAC should have the highest priority in future budgets. Libraries should experiment with placing existing terminals in the hands of the public.

2. When adding an electronic information product that has broad potential use (an electronic general encyclopedia, for instance), mounting it on the CARL Integrated Library System should be considered first. This recognizes the choice the Library has already made in favor of an online system to disseminate the electronic information that will required by most library users.

3. The CARL community information module for health information to be piloted in FY91 should be expanded to include most of the Library's community information records, such as organizations in the Rainbow Directory, the Literacy Directory, the Guide to Special Resources and the Telephone Redbook. Information policies and services in the area of information and referral should be reexamined in light of this pilot.

4. The impact of the use of the PAC by end users and by dial-up users should be reviewed quantatively and qualitatively. This data and observation would be used in the ongoing development of desk procedures, telephone systems, staff training and descriptive materials for patrons.

5. The Library should explore adding an electronic encyclopedia and IAC databases and the related fee-based document delivery option to the PAC in FY 91.

Other Systems

6. Decisions about the equipment for electronic worksites, even ones where a dumb terminal has previously been the obvious choice, should be reviewed carefully. A checklist should be developed to be used whenever the addition of a terminals or microcomputer is contemplated. This checklist would help staff make the most cost effective decision about the capacity of the proposed workstation.

7. CD-ROM products should continue to be added at the most appropriate location using standalone equipment. While potential use of the microcomputers on a LAN should be anticipated, building a LAN primarily for CD-ROM applications would be deferred until after the implementation of the PAC end user system.

8. Public access microcomputer programs need to be reviewed. Some programs might be refocused from teaching computer literacy and office automation applications to teaching computer literacy and introducing knowledge based CD-ROM products. This would be a way to demonstrate electronic resources in community libraries in the near future. Public domain software on CD-ROM may be an attractive option. One of the IBM XT's with the addition of a CD-ROM drive could offer users access to these public domain programs, which could be downloaded for use on their home computers. In this way the Library would continue to serve patrons interested in applications software and would meet in part the requests for circulating software.

Ways of Thinking

9. The direct use of electronic information tools by the public should be preferred to mediated uses of such tools. The use of library staff as the intermediate users of systems which were designed for use by the public should be avoided.

10. When thinking about technology upgrades, make the improvement of the library's information product the stated goal, not the improvement of the machine/s in themselves.

CONCERNING BUDGET STRATEGY

11. It is time to explore the kind of fully or partially subsidized services that were suggested in the Fee Policy. The local funding outlook in the first few years of the 1990's is not highly favorable for dramatic changes or expansions in the programs of County departments. The Capital Improvement Program will continue to be tight and an unpromising source of program development funding. The Operating Budget will be based on static tax rates and fees for service will continue to be a high profile budget strategy with County budget planners.

12. A feasiblity study for a fee supported Business Research Service should be carried out as background for an above the MARC request in a forthcoming budget. This service would include high quality document delivery service, end user electronic information products and librarian research services to be billed at a per hour fee. This is a logical extension of our present business service and is one of the areas in which we are most prepared to move forward on fee supported service model.

13. Fees for prints from CD-ROM databases and for pre-fax photocopying should be proposed, bringing this in line with the present photocopy policy for print reference materials. Allowing clients to choose fee based document delivery options via library networks should also be considered.

14. The funding of the current 2.1 collection development initiative should not be pitted against improvements in information technology if it can be avoided. Information technology must be addressed as a co-equal basic requirement for a 21st century library. New forms of information do not supercede the old.

15. Setting aside all new, non-inflation related increases in reference materials budget of the next three years for the enhancement of the reference product through electronic systems should be considered, even if this is above the 5% now recommended in PSP 2.1. Disregarding the PSP, do not use any new money for hardcopy periodicals until a better system of document delivery and shared resources is in place.

16. A collection development committee including agency heads and reference staff representatives should study the reassignment of 5-10% per annum of the present serials budget to electronic information and transmission tools by the end of FY92.

CONCERNING ORGANIZATIONAL DEVELOPMENT

17. The future of regional libraries and their specialty information centers needs to be studied in FY91. Decisions about the services at these libraries are key components in planning information services development. Two regional libraries are the 90's renovation pipeline, and should be reconsidered in the light of such questions as:

    - should regional libraries have missions that include all services offered by the Department from the most popular to the most sophisticated?

    - what might be the impact of information service goals that stress moving information electronically, often directly to the home or business of the requestor, on the present commitments to specialty development?

18. As part of the implimentation of the CARL acquisitions module redundancies and ambiguities in the accounting and receiving process for materials in various administrative units should be studied and eliminated where possible. Longstanding needs for better reporting on the patterns of selection and expenditures for materials should be also be addressed.

19. Organization wide E-MAIL utility is needed, and the use of electronic communication across the organization should be supported and promoted as a way of revitalizing instant, less formal communication between staff members who can no longer meet face-to-face on a regular basis for shoptalk.

20. The administration should work energetically at the County and State level for the development and funding of a better electronic infrastructure for libraries and educational institutions and for the connection of existing electronic information resources.

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ECONOMIST 12/23/89 p.47

WPPINFO/425CD, WPPINFO/446Charts
WPPINFO/435

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ELECTRONIC LIBRARY SERVICES: CHOOSING THE LIBRARY FUTURE

GLOSSARY PAGES

ABI/INFORM/BUSINESS PERIODICALS ON DISC - a product of University Microfilms which combines a business oriented, bibliographic (or index) database, ABI/INFORM, with a database of fulltext images of the business periodicals from 1980 most frequently retrieved from that index. Both databases are stored on CD-ROM. The total package comes with about 20 CD's. The product comes with a leased workstation, including CD-ROM player, microcomputer, monitor and printer. (This product is also discussed in Figure 11 on page 22.)

artificial intelligence - The term covers a variety of development intended to make computers 'smarter', including more efficient representation of knowledge, reasoning and deduction capabilities and problem solving capabilities. As an example in a 'smarter' online public access catalog, the program might be designed to offer suggestions of related search terms when certain other terms were used in word searches. (See also expert systems)

ASAP file - a part of Information Access Corporation's trademark for its fulltext files on DIALOG. In the MAGAZINE ASAP file, the complete text and indexing for over 120 publications chosen from the approximately 500 publications covered in MAGAZINE INDEX is searchable and may be received online. I assume ASAP means as soon as possible.

ASIS - **American Society for Information Science**, an organization of information specialists, scientists, librarians, and others interested in the use, organization, storage, retrieval, evaluation, and dissemination of recorded specialized information. Their annual meeting is in the Fall and is frequently in Washington.

bibliographic database - A bibliographic database offers only citations to the contents of journals, reports, etc. Many bibliographic databases contain abstracts and other descriptions of the contents of articles. A **document database**, or **fulltext database**, contains the complete text of published articles, reports, the encyclopedia, legal case law and citations, etc. The text is searchable. Falling somewhere in-between these two kinds of databases are those which contain directory information such as lists of products and companies. Although public libraries do not deal with them much, **numerical databases**, often business statistics, are among the most heavily used nationally.

BIDNET - BidNet is a company of Dun & Bradstreet that has two online databases on DIALOG. These databases offer access to state and local government bidding opportunities. (See also Figure 10, page 20)

BUSLAN - This is an **imaginary** service, envisioned in Scenario Two. It is a local area network at Bethesda on which a number of business related databases, both commercial and locally created, would be available both for use in the library and by dial-up to businesses and individuals who possess a password.

CARL - **Colorado Alliance of Research Libraries.** The company which created, sells, and develops our present integrated library system, i.e. the circulation system, the public access catalog, UNCOVER, and the acquisitions system, etc.

CD-ROM - **Compact Disc Read-Only Memory.** Based on the compact disc audio technology, what have come to be known as CD-ROMS are used to store digital data for personal computers. **Read Only-Memory** means that the person using the information can call up the information to look at it, and perhaps store a copy of the information elsewhere for further manipulation, such as sorting or word processing. The user cannot put any information on the compact disc or otherwise change what is stored there. (See also WORM).

connect charge - The amount of money charged for the time someone is connected to an online database or to a network which provides access to databases or other information. Connection is usually made via a modem, over telecommunications lines. Connect charges are generally stated in the cost per hour of time. As an example, recently Montgomery County used Duns Market Identifiers, a business directory database on DIALOG, 3.163 hours in a month at a rate of $105 per hour for a total connect charge of $332.27.

dumb terminal - a terminal which can only transmit or receive data to and from a servicing computer.

E-MAIL - **electronic mail**, primarily the transmission of messages from computer to computer, or from computer workstation to computer workstation. Mail can be transmitted through an organization's internal network, or it can be linked to external carriers for transmission to networks or individual microcomputers in other places.

EDUCOM - a non-profit consortium concerned with computing and communications issues in higher education. As far as I know EDUCOM is not a true acronym.

end user/end user systems - the end user is the person who is the ultimate recipient of information flowing through a system. In our case, end user systems are those which are meant to be used directly by the public with little or no assistance by the staff.

expert systems - a computer system which reflects the decision making processes of a human specialist. It contains knowledge and reasoning rules related to an area of expertise and is intended to operate as a skilled, cost effective advisor.

G-loop - the communications network that will connect various government buildings in Montgomery County.

gateway - An interface which allows a terminal on one network to communicate with a terminal or computer on another. For example, if we connect with the American Library Association's network, ALANET, it provides us with a further connection to Dow-Jones databases to which we do not subscribe individually.

GUIDE TO SPECIAL RESOURCES AND RESOURCE PEOPLE - A library publication issued each spring. It is intended to assist staff in locating special materials' collections, information resources, and equipment within the Library Department. It should be at all Information Desks.

hypertext - a method of organizing information in which the user may use links designed by the author of the software to browse through related terms, rather than searching using keywords. The links are much like automated see or see also references. For instance, if hypertext presentation was available for the following sentence from Grizmek's Animal Life encyclopedia, text defining and explaining the words in bold type could be called up immediately by placing the cursor on the term and clicking a mouse. "The Fire Salamander or European Salamander, most striking and best-known **urodele** in Europe, belongs to the family (**Salamandridae**) which also comprises **ribbed newts** and the so-called **crocodile salamanders**." In many newer programs, pictures or even full motion video of these salamanders could also be accessed by clicking on the appropriate symbol. Hypertext can also mean the non-linear presentation of information in general.

IAC databases - Databases such as MAGAZINE INDEX, MAGAZINE ASAP, NATIONAL NEWSPAPER INDEX, HEALTH INDEX which are developed, maintained and sold by **Information Access Corporation**. Many of these databases are available in various formats: through commercial online vendors such as DIALOG, mounted on networks such as CARL, on CD-ROM and on microfilm.

IBM-XT - A model of IBM microcomputer that has an 8088 processor and a hard disk. It was superceded by the IBM-AT which is three times faster than the XT, and has a 80286 processor, also know as a "286" machine. The AT is in turn less powerful than IBM PS/2 models, with 80386 processors, "386" machines.

LAN - **local area network**. A communciations network which operates over a limited geographic area such as an office building. LAN's are cable networks which link various microcomputers and devices. LAN's provide the user with the ability to communicate between workstations, to share data, programs and peripherals such as printers, hard disk storage devices, communication links to other networks, etc.

Literacy Directory - **GUIDE TO LITERACY RESOURCES**, an annual publication of the Library Department, which lists the major organizations in the County providing literacy training and services for both foreign and American born clients.

MARC - The letters stand for **Machine Readable Catalog**. Used in phrases such as '**MARC format**' or '**MARC record**', the reference is to a particular format for recording bibliographic information in machine readable form, developed by the Library of Congress. A specific part of the data is entered in a predetermined field in a record for a work. For instance, the title of a work is entered in MARC field number 245. The MARC format is currently the standard for records in most automated library catalogs.

mainframe - a large general purpose computer serving a major section of an organization. Used in contrast to minicomputer or microcomputer.

mastering - making the file that will be used as a source of reference or from which copies will be made. For example, the catalog file which is used to produce microfiche copies of our catalog is mastered, or put into final format, on a certain date. Additions to the catalog after that date will not appear in microfiche copies of the catalog made from this master.

MCPS Schoolnet - This is an **imaginary** network envisioned for the scenarios. It would provide access to the local area networks now being developed in high schools, such as Quince Orchard, and the information products mounted on them. In addition other school system databases on courses, schools, school statistics might be available through this network.

mediated use - refers to a situation in which staff provides access to information contained in some electronic information product. The public does not sit down at the terminal and use the product directly. For example, in branches where there are no PAC terminals available for public use, the Information Desk staff provides information about book ownership and availability by using the PAC and telling the questioner what has been found.

METRO MONTGOMERY - an **imaginary** database, which would be mounted on the library's CARL integrated library system network. The database would contain economic, demographic and other statistics for Montgomery County, information about County businesses and other related text. This database is modeled on an existing one called METRO DENVER.

MICROCAT and MICROCAT on CD-ROM - MICROCAT is the union catalog for over 90 Maryland academic, public and special libraries. It is available on microfiche, which most branches of MCDPL have. In Bethesda and Rockville it is stored on CD-ROM and is searchable using a microcomputer. Using MILNET, this database is available online in its most updated form.

MILNET - **MARYLAND INTERLIBRARY LOAN NETWORK**. An online network by which major interlibrary lenders and borrowers in the **Maryland Interlibrary Loan Organization (MILO)** communicate electronically. Requests for loans are sent and answered daily. The **MICROCAT** database is available and searchable on MILNET. Non-electronic communications with MILO members who are not on MILNET are brokered by the State Library Resource Center at the Pratt Library in Baltimore.

OCLC - **Ohio College Library Consortium**. OCLC was the pioneer network for cataloging and classification services for libraries. Among other services, OCLC maintains a large database of cataloging records and a heavily used, national interlibrary loan network.

online - data processing or communication in which a computer or microcomputer is connected to another computer or communications channel. Communciations between these computers uses the realtime of both the receiving and sending computers. For example, when searching an **online database** our microcomputer may be connected via telecommunications lines to DIALOG's computer in California. When we are connected, we use the time of this computer and it must be available for our instructions. A charge is made for the time we are connected to both the telecommunications network and the computer. When searching using a **CD-ROM database**, both the programs that allow us to search and the data being searched are available on the microcomputer itself. Charges for time used are avoided. (See also page 21 paragraph 2)

peripherals - any input, output or storage device connected to a computer, including light pens, printers, modems, and CD-ROM drives.

PSP - **Public Service Plan For Public Libraries in Montgomery County, Md. FY89-94**, i.e. our last six year plan.

RAINBOW DIRECTORY OF AGENCIES AND ORGANIZATIONS IN MONTGOMERY COUNTY - a joint publication of the Department of Public Libraries and Montgomery United Way. Currently the directory is published annually in late summer. In the future the Library hopes to offer expanded information about these agencies and organizations on the CARL system.

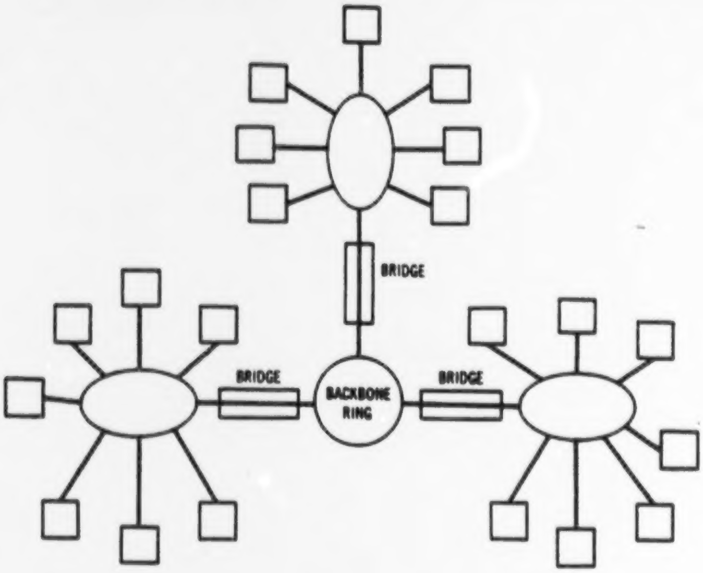
remote host - a computer, located in a different geographic location, that provides services such as database access. For instance, the computers that store and provide access to the over 350 databases on DIALOG are in California. When we dial-up DIALOG and connect to these computers, we are connected to a remote host.

royalty charge - In this context, a charge made for use of electronically stored articles which are copyrighted. The holder of the copyright must be compensated for the use of the copyrighted material.

TELEPHONE REFERENCE REDBOOK - An ongoing publication of Telephone Reference which lists elected officials on the local, state and federal level. It is updated by replacement pages throughout the year, and should be available at all Information Desks. This file could be automated and housed on the CARL integrated system in the future.

token ring backbone - a '**token ring**' refers to a specific type of communications network design. A 'token' is a data packet used to transmit information on the network. A 'ring' refers to a network layout in which components are connected in a circular pattern. It comes up in this paper in connection with the network that is being developed in the Executive Office and Council Office Buildings (EOB/COB). The information networks, or rings, of various departments, will be linked through bridges to a '**backbone**', allowing high speed transmission of messages between them. (**See diagram on next page.**)

Backbone Ring Connecting Three Token Ring Networks



From: Schatt, Stan. UNDERSTANDING LOCAL AREA NETWORKS. Sams, 1989 p.100

transparent to the user - refers to work that is done by the computer or on the network which is not seen by the user of the system. For example, large networks will support various operating systems in a way that is transparent to the user. This means that microcomputers such as Apples and IBMs that use different operating systems would be able to talk to the main computer and other parts of the network with no change in the commands given by the user. Translation of these instructions would be done using programs and equipment at a higher layer of the network. The user would be unaware of the translation process, thus it would be transparent, or unseen.

union catalog - a catalog which integrates into one file the holdings of different libraries of the same institution, or of many different kinds of libraries of a particular region or type. (See also MICROCAT)

union library database - a database that contains the catalogs of many libraries, essentially an automated union catalog. MILNET features such a database. An alternative would be a network, like CARL's, which offered access to many library catalogs in separate files which are searched separately. On a very sophisticated network a search might be made simultaneously across these files using one set of commands.

WORM - **Write Once Read Many**. An optical disc technology in which the user may record information on the disc as well as read from it, but not erase or change what has been recorded.

Following books were used in preparation of this glossary: DICTIONARY OF INFORMATION TECHNOLOGY, 2nd Ed.; COMPUTER GLOSSARY FOR EVERYONE; INFO WORLD CONSUMER PRODUCT GUIDE; UNDERSTANDING LOCAL AREA NETWORKS; WRITING BETTER COMPUTER USER DOCUMENTATION, From Paper to Hypertext; and the ENCYCLOPEDIA OF ASSOCIATIONS. WPPINFO/731

A STAFF DEVELOPMENT PACKAGE BASED ON ELECTRONIC LIBRARY SERVICES

For Use at Staff Meetings or Heads of Service Meetings

January - June 1991

A STAFF DEVELOPMENT PACKAGE
BASED ON **ELECTRONIC LIBRARY SERVICES**

Branch Librarian's Introduction

ELECTRONIC LIBRARY SERVICES, CHOOSING THE LIBRARY FUTURE (1990), by Kay Ecelbarger, Acting Chief, Collection Development MCDPL, is a document which, through reading and discussion, can be used to raise the awareness of staff about the information context of the 1990's. The following pages provide instructions and discussion questions so that this document can be used for staff development in a series of staff meetings or heads of service meetings.

The major objective for this staff development piece is: All staff will have read about and discussed the information context of the 1990's as described in **ELECTRONIC LIBRARY SERVICES, CHOOSING THE LIBRARY FUTURE** by July 1, 1991.

A second objective seems also appropriate: By July 1, 1991 all professional staff will be able to describe the current information context in Montgomery County Public Libraries, the information context of the next decade and also to describe and discuss the various electronic futures that are to be considered.

In many branches the various sections of the document would be appropriately discussed at a staff meeting. At other branches it may be more appropriate to have the initial discussion at a heads of service meeting and allow the Heads of Service to have a similar discussion with the various services in the branch. This will be dependent upon the number of people in the branch and the way the particular branch librarian wishes to use the section. As far as possible, all clerical staff should be included in the discussions.

A series of sessions, approximately 7 in number, would be needed to fully utilize this document. There are 7 chapters in the document, each of which is generally appropriate to a half-hour discussion session based on reading the section before the meeting. The discussion could be done once a week for 7 weeks or it could be done once a month for 7 months. However, the goal is that by the first of July of 1991 the full discussion outline would have been covered in each branch.

Public Services will make available to you, at your request, each of the separate sections of **ELECTRONIC LIBRARY SERVICES** in sufficient copies so that a copy is available for every 3 staff members. In addition, a discussion outline will be provided for each of the sections. Public Services is also willing to provide answers in written format to questions that are raised by staff. Public Services will also take any interesting ideas that are generated, combine them with other staff ideas and create a column for the Open System on what staff thinks about the information environment of the 1990's.

The sections of the **ELECTRONIC LIBRARY SERVICES** document are as follows:

1. **Users of the Future** - pages 6 through 11
2. **Information Technology** - pages 12 through 25
3. **Where We are Now** - A Survey of MCDPL's Current and Near Term Electronic Information Systems - pages 26 through 45
4. **Funding** - pages 46 through 52
5. **Organizational Change** - pages 53 through 58
6. **Scenarios** - pages 59 through 75 (This includes 4 separate scenarios)
7. **Recommendations** - pages 75 through 79

BEST COPY AVAILABLE

A separate instruction sheet for leaders and assignment and discussion question memorandum for participants has been developed for each of these sections. Please use them freely and creatively.

The following support materials are available:

- ▲ Distributed with this packet: full set of leader and participant instruction and discussion sheets; sets of chapters 1 and 2 and a glossary for all chapters in sufficient quantity for each 3 staff members.
- ▲ Available through the branch - Branch Community Profile (from Branch Librarian); arrangement to visit regional for hands on experience (through Branch Librarian or at June systemwide ''electronic event''*); **Montgomery County Library Survey - A Report on the Findings** - Timothy Triplett, Survey Research Center (1990) (one copy sent to each Branch Librarian).
- ▲ Available from Susan Eason - Videotape of Online Search and CD-ROM usage; articles on fundraising; packet of brochures on on-line and CD ROM products; chapters 3 - 7 as needed.

*In June 1991 the Reference Librarians Planning Committee with the Branch Librarians Planning Committee are planning an ''electronic event'' for June 1991 for all professional staff which will take place at regional libraries.

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ELECTRONIC LIBRARY SERVICES - #1

Leader's Directions

Assignment: To present and discuss "Users of the Future," pp. 6-11

General Recommendations: Total training time should be approximately 30 minutes. The committee recommends that the discussion be led by the Reference Librarian and LAS. Discussion leaders should read the chapter and be able to summarize before the discussion begins. Discussion leaders should also review the community profile and be able to highlight the technology being utilized by local schools, businesses and other organizations.

Discussion leaders should see that the following points are brought out in the discussion:

1. Different user groups will have different access requirements.
2. Montgomery County residents will be very computer literate.
3. The library will need to recognize the phenomenon of stress associated with the inability of some users to cope with new technogy.

MEMORANDUM

Date:______________________

To: Participants in **ELECTRONIC LIBRARY SERVICES** discussion, #1. "Users of the Future"

From: ____________________________

Subject: Assignment.

Meeting time and place:________________________

Before the meeting please read pp. 6-11 of **ELECTRONIC LIBRARY SERVICES, CHOOSING THE LIBRARY FUTURE**. In addition, read over your agency's Community Profile.

Consider the discussion questions as you do your reading. If you are unable to attend the session, complete the assignment and submit comments on at least one question to the discussion leader prior to the session.

QUESTIONS FOR DISCUSSION

1. What are the particular information traits of Montgomery County residents today? We know a great deal about them now, but will these traits continue into the future unchanged?

2. How might we expect these traits to change in the 1990's? What about the unique traits of adult users, older users, students, children, minorities?

3. What are the downsides of this transition?

4. What can be done to provide a bridge to this world for the timid, handicapped children, and people who do not adapt to technology well?

5. Is your branch ready to step into this world? Are you? What do you need to make this transition? What is happening in your branch that is part of this future?

6. Are there questions that you need an answer to? Are there questions for which there is no current answer?

7. What does it mean to stress the "system"? What are the barriers for the patron who tries to access materials throughout the system?

8. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do to make yourself successful in such a role?

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ELECTRONIC LIBRARY SERVICES - #2 and #3
Leader's Directions

Assignment: To present and discuss "Information Technology," pp. 12-25, and "Where We Are Now," pp. 26-45

General Recommendations: The discussions of these two chapters are so closely related that the assignments for both should be given together. However, they should be discussed in separate half-hour sessions.

A short videotape on CD-ROM products and online searching using Dialog has been made. Video viewing equipment will be available so staff can view the tape. The Reference Librarian should have hands-on experience with a CD-ROM product before this discussion.

Reading the chapters plus video viewing and/or hands-on experience should be done in advance of the discussions and up to 1 1/2 hours of off desk time per person should be allocated for this prepearation.

Discussions should last a half hour each. It is recommended that the discussion of "Information Technology" be led by the Agency Head and "Where We Are Now" be led by the Reference Librarian. If at all possible these sessions should be scheduled at least two weeks apart to allow time for viewing and/or hands-on experience. Needless to say, the person leading the discussion should take the time before the session to understand the resources under discussion.

The following points are most important to include in the discussions. If they are not elicited by the questions, include them in your comments.

INFORMATION TECHNOLOGY

1. The information technology described here is already available in many universities and businesses.
2. The plusses of this technology include: providing information faster and with greater scope, currency and depth than we now have available; having the information and tools directly available to the end user; possibility of customizing information (McGraw-Hill).
3. Minuses include the need for staff and public to be computer literate in order to utilize these resources and the expense of these technologies.

WHERE WE ARE NOW

1. The technologies described here are currently or soon to be available in MCDPL.
2. Some, but not all, hard cover materials are on their way out. Choices will have to be made between hard cover and high tech materials in some instances and/or to have both formats in others. How long can both formats be afforded?
3. Judgments must be made about when and where it is appropriate to use each of these technologies.

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MEMORANDUM

Date:____________________

To: Participants in **ELECTRONIC LIBRARY SERVICES** discussion, #2 and #3. "Information Technology" and "Where We Are Now."

From: ________________________

Subject: Assignment.

Meeting time and place:____________for session #2

Meeting time and place:____________for session #3

Before the discussion meeting on ______, read pp. 12-25 in **ELECTRONIC LIBRARY SERVICES, CHOOSING THE LIBRARY FUTURE**.

Before the discussion meeting on _______, read pp. 26-45 and complete the video assignment.

Consider the discussion questions as you do your reading and other preparation. An hour and a half of off desk time should be set aside for your combined preparation for these discussions. Consider how you want to allocate your preparation time for the two sessions. If you are unable to attend a discussion session, complete the assignment and submit comments on at least one question to the discussion leader prior to the session.

INFORMATION TECHNOLOGY (pp. 12-25) - Session #2: This section reviews the options for the library in the next five to ten years.

QUESTIONS FOR DISCUSSION

1. What are some outstanding capabilities or characteristics of the systems described in this chapter?
2. What are the plusses that you see? What are the minuses?
3. How do you feel that the users of your library will accommodate this kind of information future? Will some groups accommodate it easier than others?
4. What can be done to help people (staff and patrons alike) to move into this information age which we increasingly believe is inevitable?
5. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do make yourself successful in such a role?

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WHERE WE ARE NOW (pp. 26-45) - Session #3: This chapter is a survey of MCDPL's current and near term electronic information systems. A seven page overview is followed by charts detailing various systems. Your attention should be directed to the two center boxes on each chart. These describe the FUNCTION/S and the INFORMATION STORED AND/OR ACCESSED.

QUESTIONS FOR DISCUSSION

1. When and where is it appropriate to use each of these technologies?
2. Are hard cover materials on their way out? Will these technologies quickly take the place of some of the books we have on the shelf?
3. Should this happen or should books be preserved?
4. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do make yourself successful in such a role?

I. A library home video showing current technologies in action in MCDPL will be available for viewing at your library. If you have not used or seen demonstrations of these systems previously, view the video before the second discussion session. A product information packet (with vendors' brochures, etc.) will accompany the video to provide added information about specific systems.

QUESTIONS FOR DISCUSSION - VIDEO and/or
HANDS ON ASSIGNMENT for Session #3

1. Of all the systems shown in the video, which one(s) would be best for library patrons?
2. Which hard copy tools would they replace? Would both formats be needed? Why?
3. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do make yourself successful in such a role?

OR

II. In addition, or as an alternative to the video (staff time permitting), make a visit to a library with one of the systems described in the chapter.

Think of yourself as a patron and make use of the system to answer a question of possible interest to you or a friend. For instance, use MAGAZINE INDEX PLUS at Gaithersburg or Wheaton to find articles on a hot topic or HEALTH INDEX at Wheaton for articles on a medical topic; use DISCLOSURE at Bethesda to find company information useful to a job applicant.

Even a ten or twenty minute visit will give you a sense of what the system has to offer. The purpose of your visit is not to make you an expert on a particular technology but to give you an idea of its potential use for library patrons.

QUESTIONS FOR DISCUSSION

1. What is your reaction as a patron seeking information?
2. What is your reaction as a staff member whose library might have this technology?
3. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do make yourself successful in such a role?

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ELECTRONIC LIBRARY SERVICES - #4
Leader's Directions

Assignment: To present and discuss ''Funding,'' pp. 46-52'

General Recommendations: Staff preparation for this discussion should be one hour. Readings should be done during off-desk times. It is suggested that the ''Funding'' discussion be led by the Agency Head.

The following points should be brought out in the discussion:

Funding: Critical Issues

1. A definition/description of ''basic free library service''.
2. When do ''user fees'' become legitimate?
3. What are some of the pitfalls of fundraising and user fees?
4. What are some viable fundraising activities for the local AND sytemwide levels?

Funding: Strategies

1. Circulate **articles** on funding/fundraising and fundraising task force final report.
2. Circulate the Triplett Survey to the staff before the meeting. Present the implications of this survey for fundraising.
3. If your LAC (or a neighboring LAC) is sponsoring fundraising activities, talk to the agency head about their progress and their present comments to the session. Have the group consider the implications of a local Friend's group fundraising for their branch.

MEMORANDUM

Date:____________________

To: Participants in **ELECTRONIC LIBRARY SERVICES** discussion, #4. "Funding"

From: ________________________

Subject: Assignment.

Meeting time and place:_______________________

Before the discussion meeting read pp. 46-52 of **ELECTRONIC LIBRARY SERVICES** and any other handouts on fundraising and user fees that you have been given. Consider the discussion questions below as you do your reading.

QUESTIONS FOR DISCUSSION

1. What should constitute "basic, free library service" provided through County funding? What services and/or products might be considered for user fees given our policy? Should we introduce this concept gradually no matter what the county economic picture is or should it only be linked with bottom-line decisions necessary to meet mandatory budget cuts?

2. How could private fund raising, endowments, and user fees impact on intellectual freedom matters such as balanced collection development and confidentiality of user records?

3. How can we protect our current level of County funding as we start to receive private funding and user fees?

4. How do we educate our patrons as to the need to fund electronic information sources? What are some end-user needs that electronic resources will help us meet.

5. How can we enlist the help of communities in raising funds? How can we build community support for projects? Are the findings of the Triplett Survey on funding valid? Is the public's support soft?

6. It's probably time to start trading off some of our printed sources for electronic sources. Which titles should we trade? Which shouldn't we? What libraries should be involved? (This question involves Recommendations nos. 15 & 16 in the Report).

7. Montgomery County spends $16 million on salaries, $3 million on materials and $1 million on other operating costs for libraries each year. What kind of trade-offs would you recommend? Is there any space in this budget to look for trade-offs?

8. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do make yourself successful in such a role?

ELECTRONIC LIBRARY SERVICES - #4

Leader's Directions

Assignment: To present and discuss "Organizational Change," pp. 53-58

General Recommendations: Total training time should be approximately 30 minutes. The discussion should be led by the Agency Head. Discussion leader should read the chapter in advance and be able to summarize the chapter, highlighting the significant points before the discussion begins.

The following points should be brought out in the discussion.

1. The planning stakes are raised because of the high risk involved in information systems.
2. Change management is critical.
3. The roles of librarians and paraprofessionals will change as more information technology is introduced in the workplace.

MEMORANDUM

Date:____________________

To: Participants in **ELECTRONIC LIBRARY SERVICES** discussion, #5. ''Organizational Change''

From: ____________________

Subject: Assignment

Meeting time and place:____________________

Before the meeting please read ''Organizational Changes'' pp. 53-58 of **ELECTRONIC LIBRARY SERVICES**. Think about your role (i.e., agency head, adult services librarian, reference librarian, children's librarian, library associate, library assistant, desk assistant) in the Department, and the following discussion questions while reading.

QUESTIONS FOR DISCUSSION

1. What do we have to learn in order to make the transition to one of these roles?
2. Where would the professional librarian see her or himself?
3. What role would s/he take on?
4. What role would be important in helping children access this information? Are particular skills needed to do this? What other user groups require assistance and advocacy in this environment?
5. What programming needs do you see for the future?
6. What steps can be taken to maintain enthusiasm and interest until the technology arrives?
7. How in the transition period can the traditional roles of librarians be balanced with the high tech roles?
8. Will there be changed roles for the clerical staff? What will be important to make this change successful?
9. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do make yourself successful in such a role?

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ELECTRONIC LIBRARY SERVICES - #6

Leader's Directions

Assignment: To present and discuss the four scenarios, pp. 59-75.

General Recommendations: Total training time should be 1 1/2 hours. Reading of the scenarios should be done in advance of the discussion and up to 1/2 hour of off-desk time per person should be made available for this preparation. Discussion should last one hour. The committee recommends that the discussion be led by the Head of Reference Service in the branch. The person who leads the discussion should understand the electronic resources mentioned in the scenarios.

The following points are crucial and should be brought out in the discussion.

1. If we are going to be credible information providers in this period of increasingly sophisticated sources and users, we must be able to provide formats which are comfortable and yet efficient for their user's.
2. The volume of information being published in the "information age" is so much larger than in previous time periods that automated systems are increasingly required for systematic management and retrieval.
3. Paralleling the "information explosion" is a growing level of sophistication on the part of the public regarding computers and related technology. Parents who did not grow up with technology expect their children to be taught computer skills. It is already possible to observe an increasing level of patron comfort with computers and related technology. Modems and personal computers may soon be as widely owned as TVs and VCRs.
4. In each of the scenarios the library in responding to the patron is making choices on what particular roles to play. By emphasizing certain services and deemphasizing others, choices are made on how funds can best be spent to serve the patron. For each scenario look at what services have been deemphasized. Do staff members agree or disagree as to what should be done?

MEMORANDUM

Date:________________________

To: — Participants in **ELECTRONIC LIBRARY SERVICES** discussion. #6.
"Four Scenarios"

From: ____________________________

Subject: Assignment

Meeting time and place:__________________________

Before our meeting read "Scenarios" pp. 59-75 of the **ELECTRONIC LIBRARY SERVICES.** Envision a neighbor or friend and bring to the meeting 1-3 information needs (present or probable) on which that person could find information at the library both in its present state and as proposed in one of the scenarios. Think about the following discussion questions while reading.

QUESTIONS FOR DISCUSSION

1. List the information needs that participants have brought with them. Have the group examine these in the light of what information we could provide with current library service and what we might be able to do with enhanced electronic capabilities.

2. "More new information has been produced in the last 30 years than in the previous 5,000. About 1,000 books are published internationally every day, and the total of all printed knowledge doubles every eight years." Peter Large, The Micro Revolution Revisited.

   "Approximately 9,600 different periodicals are published in the United States each year." Richard Wurman, Information Anxiety.

   Volume 21 (1957-1959) of the Readers' Guide to Periodical Literature contains approximately the same number of pages as volume 49 (1989) -2,200.

   These are just a few examples of the "information explosion." How are we going to keep pace with it?

3. As an information provider with access to new databases and technology, what kind of new possibilities do you envision in providing assistance to patrons. What is the potential? What are the limits?

4. Why is it necessary to expend resources on expensive computerized systems now?

5. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do make yourself successful in such a role?

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ELECTRONIC LIBRARY SERVICES - #7
Leader's Directions

Assignment: To present and discuss "Recommendations," pp. 76-79.

General Recommendations: Staff preparation for this should be approximately 30 minutes. It is recommended that the Reference Librarian lead the discussion.

The following points should be brought out in the discussion:

Recommendations - Critical Issues:

1. The currency of information from electronic systems.
2. Dial-up access means that people can use the public library while at home or in the office.
3. Many different types of information (encyclopedias, directories, etc.) can be made available on-line.
4. Some of the ways that electronic systems will change our service.

Recommendations - Strategies:

1. Prepare an outline of the major recommendations in this section, focusing on the use PACs and dial-up access for a variety of information needs.
2. Be creative. Develop skits to role play using some of the scenarios as guides. Involve the LAS and circulation staff in the role playing whenever possible.
3. Demonstrate the advantages of UnCover, showing how this can be used quickly to find articles in periodicals.

MEMORANDUM

Date:____________________

To: Participants in **ELECTRONIC LIBRARY SERVICES** discussion, #7, "Recommendations"

From: ________________________

Subject: Assignment.

Meeting time and place:____________________

Before the meeting read "Recommendations", pp. 76-79 of **ELECTRONIC LIBRARY SERVICES**. Practice using UnCover. Think about the following discussion questions while reading.

QUESTIONS FOR DISCUSSION

1. Educating the public to the advantages of the PAC is one way to increase the demand for this and other electronic resources which might translate into support for funding. Is there any way we can immediately spare an existing terminal at the branch for patrons to use as a PAC terminal?

2. What would it be like to have an electronic encyclopedia on all terminals and available through dial-up access? What would be the effect on staff? On the public?

3. Having services such as health information, the Community Resources Directory, the Telephone Reference Red Book, and the Rainbow Directory available online at all terminals and on dial-up access is proposed. How would this affect reference work?

4. What will be the impact of dial-up access to PAC? Will there be more phone calls for materials checks (including journals)? Will it help that patrons have immediate and current knowledge of availability without having to ask at the Information Desk?

5. Should we install coin operated printers on our PACs for document delivery as we add online encyclopedias and other services?

6. How should we deal with the introduction of CD-ROM in the branches? Does the potential for online delivery of sophisticated data to branches from a central CD-ROM source mean that we can change our regional system? Is a central electronic library that can transmit information to branches and homes a more logical choice for the future?

7. Should there be public access personal computers in the future in more libraries?

8. How can we provide more electronic information/services while minimizing staff mediation time with patrons who are not computer friendly?

9. Each employee of the library system must be an active participant in the move to the Electronic Library future. Given the section you have just read, what will you need to do make yourself successful in such a role?

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